

POPULAR Computing

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WEEKLY

9 May - 15 May 1985

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Vol 4 No 19

Acorn's new
BBC B+
Full
review on
page 12

Disney micro deals signed

SUPERMAN will be coming to your micro this autumn, courtesy of Beyond Software. And US Gold has signed deals giving it extensive rights for Walt Disney characters

and the Muppets.

Bill Delaney, Beyond's managing director confirmed: "Beyond and First Star are in the final stages of negotiation to publish *Superman* in the UK in September."

Superman will be released under Beyond's new arcade label, Monolith (see *Popular Computing Weekly*, May 2). Costing around £9.95, it will run on the Commodore 64 initially, although Beyond will have the rights to convert it for any format applicable to the UK market.

Bill Delaney was set to sign

the contract with Dick Spialmy, First Star's president, in the States this week.

US Gold has signed three separate deals, with Walt Disney Productions for current and forthcoming Disney licences, and with Muppet Productions.

US Gold now has the UK rights to develop a computer game based on two new Disney films to be released this year, *Return to Oz*, the long

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Platform game for QL

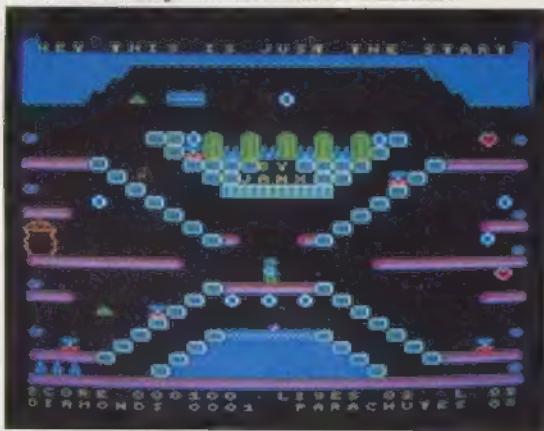
QL CAVERNS is the title of the first machine-code arcade game for the QL. It is a 3D screen platform style game to be published by Sinclair. "It's a bit like *Manic Miner*," commented a Sinclair spokesman.

The idea is to explore the caverns collecting diamonds. The game features a number of animated sprites including a central character who walks, jumps and crawls.

Other arcade games are

known to be in development for the QL, notably *Bandersnatch* - the game under development by Imagine at the time it folded and whose rights were bought by Sinclair seven months ago. The independent programming team responsible for *QL Caverns* is also thought to be working on another game.

The price will be £12.95 and according to Sinclair release is 'imminent'.



Commodore records net loss

COMMODORE International has recorded a net loss for the third quarter which ended on March 31st this year.

The loss amounted to \$20.8m (about £17m) with sales down from \$326.2m to \$168.3m (£267m to £138m). During the same quarter last year, Commodore made profits of \$36.3m (then about £28m).

Commodore's chairman, Irving Gould, stated that the company expected to announce a loss for the full year, which ends June 30th. He also

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Commodore's new manager Nick Bessey talks on page 14

INSIDE ▶

THE POPULAR BUGGY - AMSTRAD & ZX81 UPDATE

SPECTRUM 48K · COMMODORE 64

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View

Commodore's third quarter loss of \$20.8 million compared with profits of \$36.3 million last year cannot be blamed on anyone other than Commodore themselves. In this country the company has been rightly criticised for an unrealistic dealer pricing policy in which only the large multiples could afford to sell the machines for a realistic market price.

Last year's new home machines, the Plus 4 and the C16 were misplaced and mispriced, both in the UK and the US. The Plus 4, selling sluggish at £100 below the original selling price, simply detracts sales from the Commodore 64. The C16 is underpowered with 16K and is technically unexciting.

But Commodore has its own salvation at hand. Not with the C128 which is, at best, an upgrade for existing Commodore 64 users, but with the Amiga. The purchase of Amiga, the company, may well turn out to be one of its soundest investments ever.

Not only is the machine reported to have 256K Rom and 128K Rom, 68000 processor and a built-in disc drive but, significantly, it has been designed with games in mind.

Early technical information about the machine indicates that aside from a vast range of colours and a very sophisticated sound chip, the Amiga has powerful hardware for line drawing and removal. This fact alone means the machine will be capable of spectacular 3D graphics.

Commodore must do it right. There must be no delays and everything must be done to bring the price of the machine down.

Now is the time for Commodore to learn from the pricing mistakes of the past and get the Amiga right.

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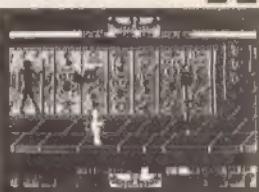
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ABC

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ALIEN B

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QDOS — for smooth operators

If you have a Sinclair QL and you want to program effectively in machine code, then Andrew Pennell's latest book is for you.

The Sinclair QDOS Companion is a complete guide to the working of the QL operating system. It begins with an introduction and a chapter on multi-tasking, before going on to cover the 8049 second processor, input/output, device drivers, exceptions, interrupts and the Job Scheduler, and QDOS utilities. The final chapters show you how both to extend SuperBASIC and make use of external ROMS.

The book is definitely not just a rehash of the QDOS manual, but extends the basic information to give you a broader understanding of how best to make use of QDOS. The QDOS traps are described not in numerical order but in a more logical order based on their use.

Andrew Pennell is an experienced Sinclair author. Practical Computing described his previous book Assembly Language Programming on the Sinclair QL as: 'An excellent introduction ... eminently readable'.

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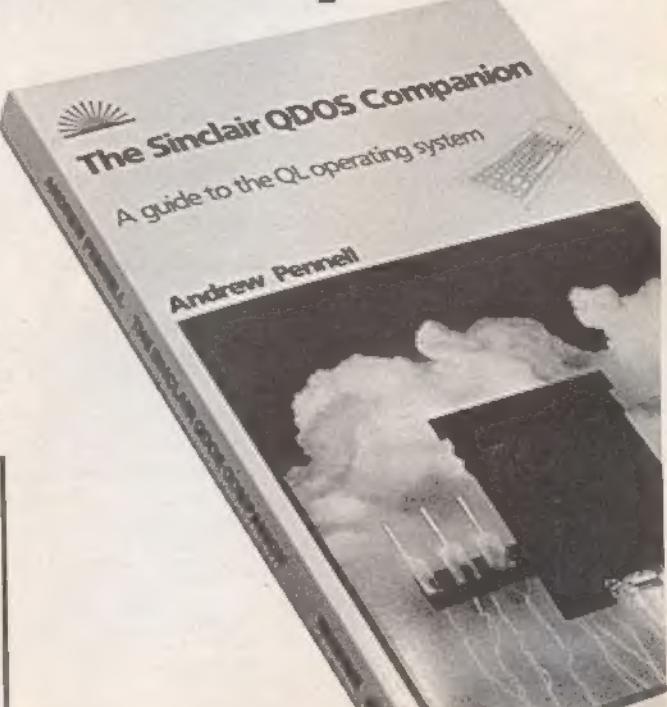
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Disney deals for US Gold

◆ continued from page 1
awaited follow-up to *Wizard of Oz* and due out this August, and *Black Cauldron*, set for release in October. US Gold hopes its *Return to Oz* game will be ready for sale this autumn but no firm plans have yet been made for *Black Cauldron*.

"We would hope to be able to bring out *Return to Oz* on Spectrum, Commodore and Amstrad machines," confirmed Tim Chaney of US Gold.

The company has also gained the rights to a computer game based on *The Jungle Book*, but again no firm plans

have yet been made.

The contract with Walt Disney Productions also allows US Gold to develop computer games based on existing characters from the Disney stable, and it will be bringing the current Disney games, by US company Sierra Online to this country. These are all educational titles aimed at young children.

The first three Sierra titles to be released here will be *Winnie the Pooh in Hundred Acre Wood*, *Donald Duck's Playground* and *Mickey's Space Adventure*. All will be available on the Commodore 64 on disc only, at £12.95, before the end of the year.

"We are looking into the technical possibilities of putting these titles on cassette," said Tim Chaney. "I would hope we could do it with *Donald Duck* and *Winnie*

the Pooh, but there's no way *Mickey's Space Adventure* will go on a cassette." This title is packaged on two double-sided discs.

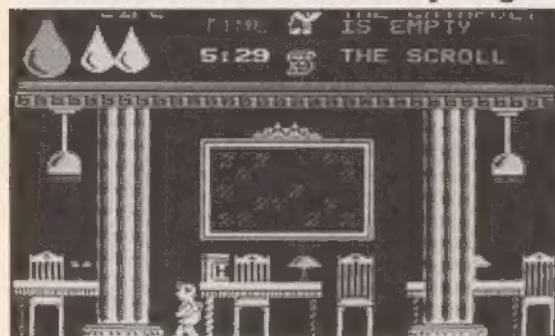
The two forthcoming releases from Muppet Productions have been licensed from Simon and Shuster in the US: *Kermit's Electronic Storymaker* and *The Great Gonzo*. Again they will be available on disc for Commodore 64 at £12.95.

The Sierra and Muppet titles will be published under a new US Gold label, KIDS!

Tim Chaney continued, "The educational market is not particularly big over here, so we'll obviously have to make it so, with the new label."

KIDS! will be US Gold's second sub-division - it launched All-American Adventures at the beginning of the year.

Herbert continues Wally saga



MIKRO-GEN's latest episode on the Wally saga is *Herbert's Dummy Run*. Herbert is the baby who featured in *Everyone's a Wally*.

The game is set in a department store, where Herbert has got lost and must find his way to the Lost and Found

office to be reunited with his parents.

Costing £8.95, *Herbert's Dummy Run* will be launched simultaneously for the Spectrum and Commodore 64 in two weeks' time. An Amstrad version is due to follow shortly.

Apple drops Lisa/Mac XL

APPLE Computer is to discontinue manufacture of the Macintosh XL (the former Lisa), and will introduce a 20Mb hard disc drive for the 512K Mac in the Autumn.

The Lisa was launched in January 1983, and was Apple's first machine to use the Macintosh operating environment. Apple changed the name to Macintosh XL at the beginning of this year, due, it claimed, to confusion about its Macintosh compatibility.

Loss for CBM

◆ continued from page 1
said that the fiscal year 1985 was clearly a transitional one for Commodore, and one of investment in its future.



Commodore International Chairman Irving Gould

The slow-down in sales - on both sides of the Atlantic - price cuts, strength of the dollar and investment in new ma-

Tiger crash cuts supply

THERE will be a shortage of software over the next week at branches of John Menzies, due to the crash of Tiger Distribution.

Tiger, which went into liquidation last week, exclusively handled John Menzies' distribution to all 120 branches throughout the UK.

"There will be shortages of stocks in stores, which will take about a week to ten days to sort out," said Alan Marshall, ex-product manager for software at John Menzies. "We have made contingency plans for the most popular titles, so that there will be plenty of 'top 20' software available."

chines, including the continuing high costs in the development of the Amiga machine, all contributed towards the loss.

Paul Lazovick, director of investor relations at Commodore US, said, "While it looks as though we will make a loss for the year, you must remember we are bringing out four new products this year, the 16-bit Unix compatible 900, the 128s, the first machine from the Amiga group and spending on R and D is up. We cut the price of the Commodore 64 in the States by 25% in February."

That price cut in the US was matched by the 50% cut in the Plus/4 in this country.

Enterprise to launch in May

ENTERPRISE is apparently planning to bring forward the release date of its 128K machine. The £249.95 64K model has been in the shops since the beginning of the year, following delays of over a year.

This time, however, Enterprise is keen to be one of the first "The 128K Enterprise should now be out in a couple of weeks' time, rather than the original date of June," said a spokesman for the company. "Machines with 128K Ram are making the headlines at the moment and we intend to beat most of the other companies."

The spokesman added that a price reduction in the 64K model seems certain. "I'm sure the 64K will be repositioned in the market when the 128K is launched - I expect it'll drop to under £200."

Acornsoft cuts Electron prices

ACORNSOFT has cut the price of all Electron software, bar three titles. The 56 reduced titles now cost £8.99.

The three which remain at their original prices are *Elite* (£17.95 on disc, £12.95 cassette), *Countdown to Doom* (£14.95 on Rom cartridge) and the Linkword language teaching series (£14.95 each). The change is intended to bring prices in line with those for the machine itself, according to Acornsoft.

Atari gains Prestel access

ATARI owners can now access Prestel using a new modem interface and software package from Miracle Technology. Multi-Viewterm/Datataci retails for £89.95.

All Prestel facilities are now available to users of all current Atari machines, including the 130XE. In addition, the package would also be compatible with the 65XE and 65XEM - if they are released.

Letters

Bad news

On this week's cover (April 18) was some extremely bad news.

It wasn't, as you might expect, on the front cover, but on the back cover - the home of our very own, the world famous Automata advert.

What can you deduce from the last broadcast? Christian Penfold bored with *Popular Computing Weekly*? No, I think that Automata is in financial difficulties! As the Piman is one of the best parts of *Popular*, I think it would be a great shame for him to end up in the graveyard depicted not too long ago in the self same ad.

Automata is one of the few software houses left in the business which is what computing is all about, ie, good, clean, non-violent fun.

*Simon James Gray
(A Faithful Pimaniac)
91 Portland Street
Southport*

Corrected listing

Some people may have noticed that Mark Snell's Clock routine in the March 28 issue will not work with some Spectrum peripherals.

This can be corrected if the following lines are added to the listing.

73 CL\$EAR 64763: FOR N=64768 to 65025: POKE N,252:NEXT N 76 POKE 64764, 196: POKE 64765, 106: POKE 64766,254

Then remove the *Clear* statement from Line 80 and change the second number in Line 130 from 9 to 253.

*S Overall
33 Chesterton Drive
Merstham
Surrey*

Poor loading

In response to A Wood's letter about turbo loaders I have a few things to add.

The Commodore 64 suffers less than the Spectrum from poor loading resulting from the use of turbo loaders because its dedicated cassette player is sufficiently reliable.

The situation with using an ordinary tape recorder with the Spectrum is not so easy. When I got *Knight Lore* I had

difficulty loading it, and now it won't load at all - which is a great pity since it was my favourite game.

Please take the hint, software companies - turbo-loaders are not what they are cracked up to be.

*Dave Baily
106 Wake Green Road
Moseley
Birmingham*

Thanks, mate!

As the author of Automata's Spectrum game *New Wheels, John?*, I would like to say thanks for the free publicity (Page 34, March 28). Anyone who helps me to have a little earn is a friend for life.

What a lovely little whizzer your buggy looks, although the only one I've seen could have been better shed, it's donk was a bit caramy and it had a hum in the bum. (Never get through an MOT like that, mate).

Keep all your deals in bed but don't get yourselves tucked-up!

*Tony Reynolds
Colchester
Essex*

Screen driver

After many hours searching through the innards of QL Archive, I found the *Print* statements do not use the standard QDOS screen drivers.

Instead, all output is processed by a Psion screen driver, which seems to have all the goodies that the Sinclair drivers are missing. By printing codes, less than 32, the cursor can be moved about easily. Both underlining and reverse video are also now available.

The codes are printed by *Print Chr (x)* as follows:

Code	[CHR(x)]	Function
5	toggle Underline On/Off	
6	Cursor Forward 1	Character
8	Cursor Back 1 Character	
■	Cursor Down 1 Line	
11	Cursor Up 1 Line	
12	Clear Screen	
13	Carriage Return (Cursor to Start or Line)	
14	Enable Cursor	

15	Disable Cursor
28	Toggle Reverse Video On/Off
30	Cursor to start of next line
	Cursor to start of previous line

If anyone wants a full list of Psion control codes I'll return one with all SAEs sent.

*Mark Webb
Highways
Butlers Dene Road
Woldingham
Surrey*

Not implemented

Iread with interest Jeff Naylor's review of the new Amstrad CPC 664 (vol 4 no 17) and felt I must point out a slight inaccuracy regarding the function *Dec\$* on the 484 as being 'left out'. It certainly was not left out, it just doesn't work due to a bug in the ROM, although naturally Amstrad statements refer to it as 'not implemented'.

Interested 484 owners can, with the aid of a disassembler, see this quite easily. Addresses E354 to E387 in the upper ROM contain a look-up table which is used to locate Basic reserved words. For example, addresses E354 and E355 contain the start address of reserved words beginning with 'A', E356 and E357 contain the start address of reserved words beginning with 'B' and so on in alphabetical order.

Reserved words beginning with 'D' start at E589 and on inspection it will be found that these are: *Drawr, Drawr, Dim, Dim Delete, Deg, Defstr, Defreal, Defint, Def, Dec and Data*.

Another table starting at D180 holds addresses for a number of functions. The address for *Dec\$* is F8E4 which is the address the interpreter will jump to, to evaluate the function. The bug exists at the address F8ED which instead of being 29Hex is 28Hex, thus corrupting the routine and causing 'Syntax Error' to be printed.

Another bug which I am sure Amstrad will find an excuse for is in string handling. For instance, one would expect the following routine to give an answer of 12345678:

10 A = 1234:B = 5678
20 A\$ = STR\$(A) + STR\$(B)
30 PRINT A\$

What one gets, however, is: (space) 1234 (space) 5678.

Whilst I am not decrying an excellent achievement on behalf of Amstrad and Locomotive Software, I dislike the fact that Amstrad seem to take delight in referring to the bugs in Sir Clive's QL (Amstrad CPC 484 User, May 1985) while not owning up to their own.

*B A Pedder
Houghton Regis
Dunstable
Beds*



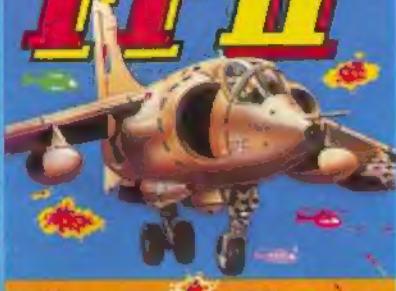
"Jenkins in accounts has reached the fifth screen in QL Caverns without using the trampolines . . ."

New by public demand the screega-scorching Falcon Patrol II is available on the Spectrum 48K as well as the C64 64.

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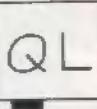
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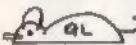
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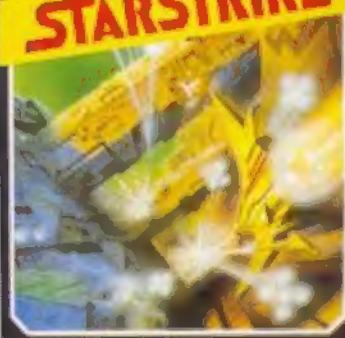


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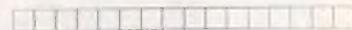
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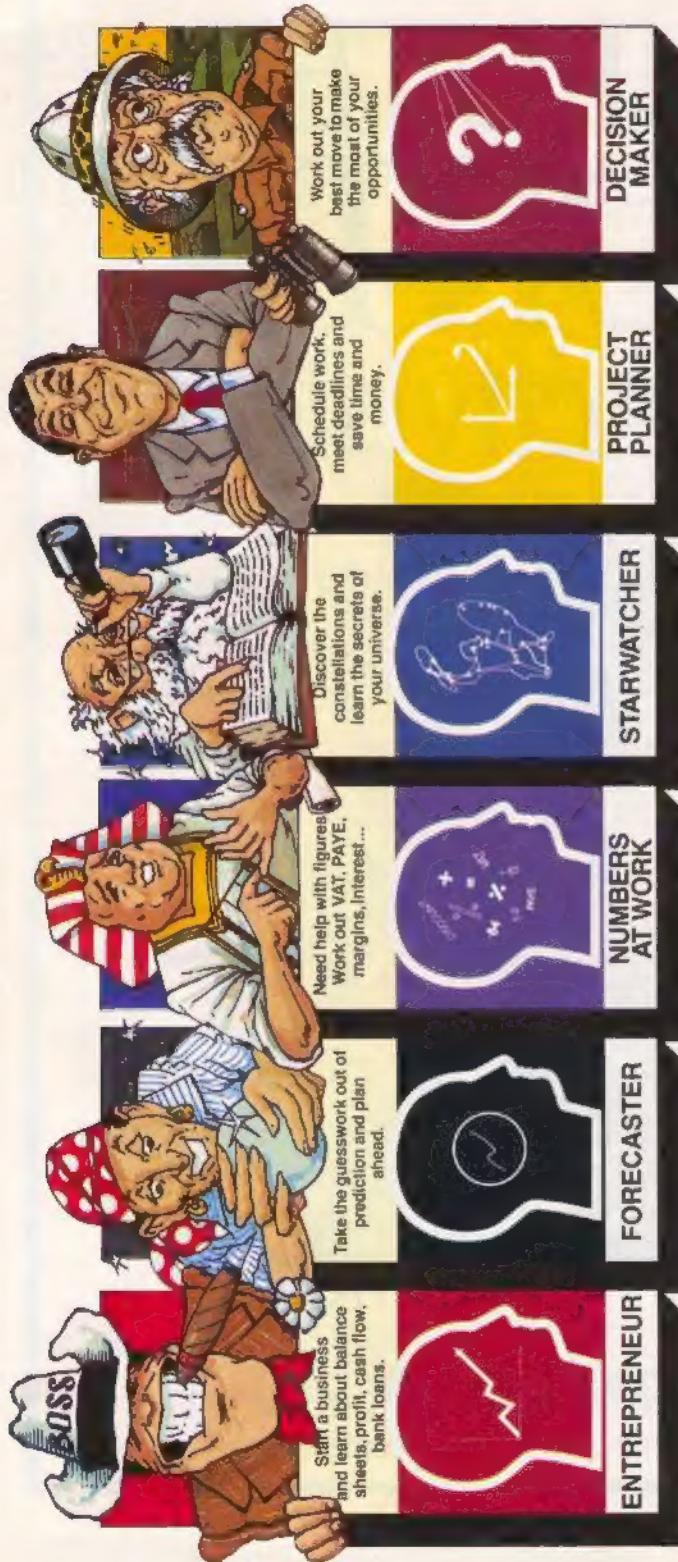
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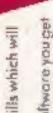
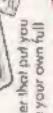
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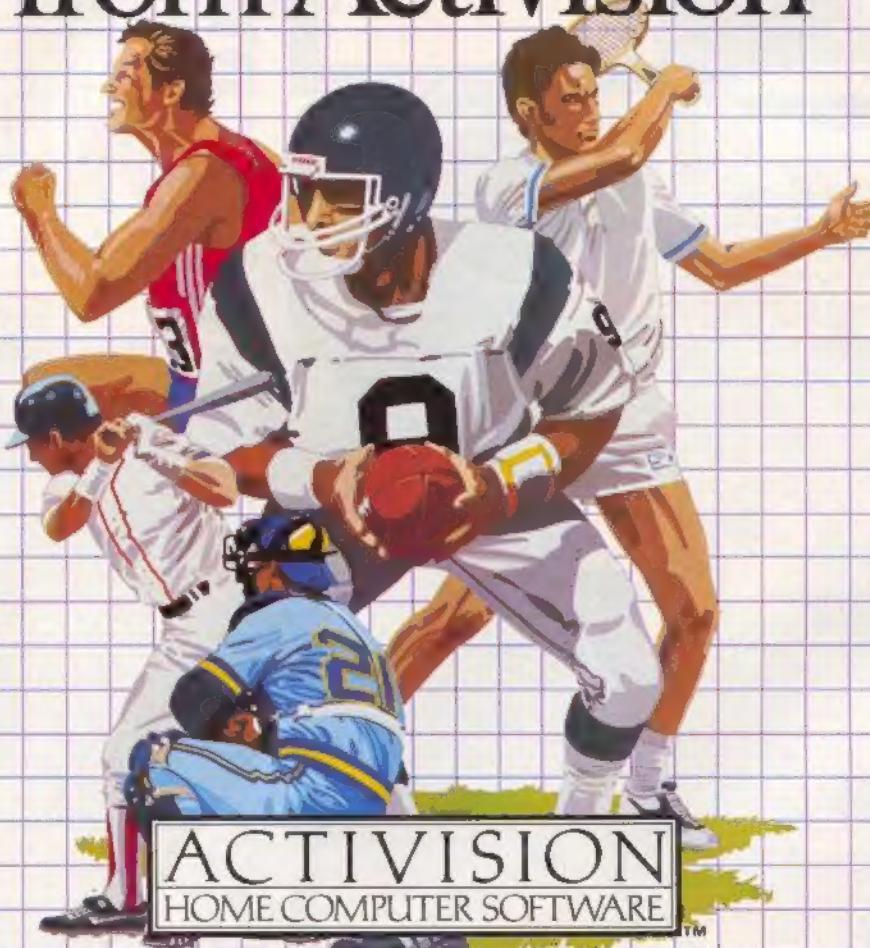
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Buggy update

As the Popular Buggy trundles along from strength to strength – an update from John Billingsley

Many readers will by now have the satisfaction of training their trolleys to gyrate around the room. A few, however, might instead be muttering curses.

Mike Carey spotted the first problem, a sadly mangled program for the Amstrad, of course the wrong one got printed! Our apologies. By now, I hope you will have deduced that Lines 330 and 340 should read:

```
330 Print#8, Chr$(0);  
340 For J = 1 to 100:Next J
```

To give the motors time to stop between segments. Now the value must be dug out of the array in 380 to give:

```
350 Print#8, Chr$(B(M));
```

Even then the gremlins had not finished, since Line 370 should be:

```
370 Print#8, Chr$(0);
```

This stops the motors at the end of the run.

Of course, as Mike points out, the Amstrad can use an upper-crust Basic, and it is reasonable to base the program on the BBC version. It then appears as the program below.

You must use a For-Next loop to allow a fraction of a second for the motors to stop, where on the BBC an Inkey (25) has a built-in delay. The BBC's Repeat-Until becomes a While-Wend.

The other problem was brought to my attention by Mr Weaver, the worried owner of a ZX81. Although I had checked the hardware for compatibility with the Spectrum, I had not dreamed that the ZX81 would not implement an Out command in Basic! I consulted Alan Dibley, famous for massacring ZX81's to make Micromice, and his only suggestion was to resort to machine-code. It sounds tough, but is in fact quite simple.

According to Alan, if you start your program with a Rem statement, the first byte of the Rem's text will be stored at address 16514. In this case we need just seven store locations, so the Rem is followed by ABCDEFG – soon to be obliterated by the machine code. Now the machine code consists of just three instructions: Lda 16514 : Out (127),A : Ret. These are turned into byte values (hex) 3A ■ 40 : D3 7F : C9. Now you just

have to poke these values into the right place. Add the following lines to the start of the Sinclair program given in the 14-20 March edition:

```
1 REM ABCDEFG  
2 LET p=16514  
3 LET mc=16515  
4 POKE mc,58  
5 POKE mc+1,130  
6 POKE mc+2,64  
7 POKE mc+3,211  
8 POKE mc+4,127  
9 POKE mc+5,201
```

Now you can substitute two lines of program for each of the Out statements:

```
10 DIM B(100)  
20 DIM T(100)  
30 N=0:TO=TIME  
40 J=0:K=0  
100 A$=INKEY$  
130 IF A$="" THEN 100  
140 IF A$=" " THEN K=0  
150 IF A$="L" THEN K=2  
160 IF A$="R" THEN K=1  
170 IF A$="F" THEN K=3  
180 IF A$="G" THEN 300  
190 N=N+1  
200 B(N)=K  
210 T(N)=TIME-TO  
220 PRINT#8,CHR$(0);  
230 FOR J=1 TO 100:NEXT  
240 PRINT#8,CHR$(K);  
260 GOTO 100  
300 TO=TIME  
310 FOR M=1 TO N  
320 WHILE TIME<TO + T(M):WEND  
330 PRINT#8,CHR$(0);  
340 FOR J=1 TO 100:NEXT  
350 PRINT#8,CHR$(B(M));  
360 NEXT M
```

```
350 POKE p,b(m)  
355 LET j=USR(mc)  
  
220 POKE p,0  
225 LET j=USR(mc)  
  
240 POKE p,k  
245 LET j=USR(mc)  
  
330 POKE p,0  
335 LET j=USR(mc)
```

The Let statement is a dummy, just to allow the machine code at (mc) to be called by the Usr function. Be sure to Save the program before you try to Run it! When machine-code crashes, it can crash for good. Having to switch the machine off and on again and restarting at square one can really hurt!

By the way, you can see Alan's latest Micromice in action at the First European Personal Robotics Conference and Exhibition, London West Hotel, Lillie Rd. (near Earls Court), 2nd-4th July. That's where the British Finals of the Euromicro Micromouse competition will be held, now that the Computer Fair has vanished. With David Woodfield he will be turning up to take his mice to compete in the World Finals in Japan in August. The EPRC will also host the first British heat of Robot Ping-Pong – it should be worth seeing.

A step forward

Jeremy Vine wonders who will buy the BBC+?

After persistent rumours of a new BBC machine, Acorn has finally launched the BBC B+, an enhanced version of the B machine with 64K Ram, built-in Disc Filing System and a totally redesigned circuit board. This is not a 'model C' - that is expected for release this Autumn - but a BBC B with a few added extras. All the familiar connections on the model B are present and this is Acorn's answer to all those who have long been asking for an improvement to the system.

The new micro is priced at £499 and although the old model B will still be selling at discounted prices, it's expected that it will only survive as long as stocks last. The pricing of the machine looks likely to attract criticism considering the competition, so is the B+ worth the extra £100 price tag?

The first striking feature of the 'B+' is its appearance. The micro is in exactly the same casing as the old model B (and A). There was no indication on the production machine I looked at that showed it was a B+ but Acorn says there will probably be a change to the plastic function key strip with the addition of the letters '64K'. The first sign of a new beast comes when switching on the micro.

A new message now appears in the top left-hand corner of the screen:

Acorn OS 64K

Acorn 1770 DFS

BASIC

Apart from this cosmetic change the screen display is precisely the same and there is no change to BBC Basic. The major changes lie in the additional hardware and a few new commands. Firstly, the hardware.

On opening the machine, the existence of a new micro becomes apparent and not just because the board shows itself to be Issue 1, 1984. The circuit board has been totally redesigned and virtually everything is now soldered. The only sockets remaining on the board are the sideways Rom sockets. Acorn have added an additional socket to make a total of six and moved them to the top left of the machine as two rows of three sockets, making them far more accessible than the model B sideways Roms, which were under the keyboard.

One criticism levelled at Acorn by BBC owners was insufficient spare sockets for extra Roms (languages, utilities etc). The addition of one more socket may seem a poor response considering the 16 RoM capacity but Acorn has now changed the Rom sockets so that 32K chips can be used. This has facilitated the saving of one socket by combining the OS and Basic chips into one. On the machine I had, this 32K OS/Basic chip was Rommed and was very definitely a

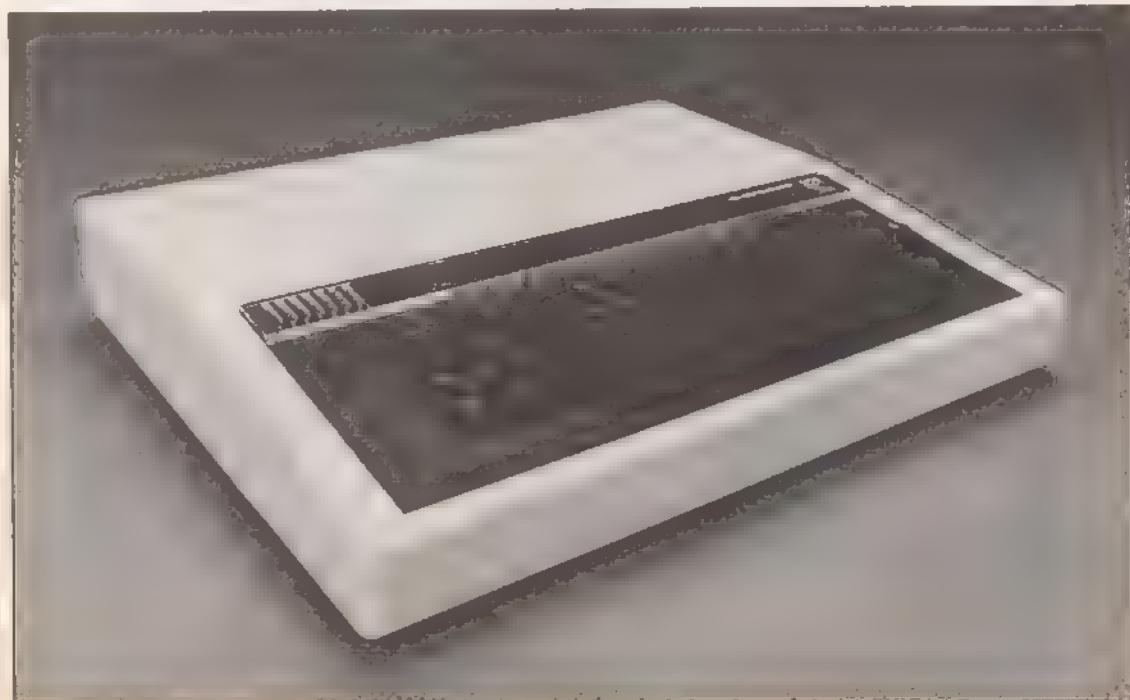
final version.

The 6502 at the heart of the old model B has now been replaced on the B+ with a 6512 which has the same language set but has a faster internal clock speed, though this did not perceptibly change the overall machine speed.

The other main addition is in a DFS (Disc Filing System) interface being provided as standard. The DFS chip plugs into one of the Rom sockets but if you already know the BBC micro you would've spotted earlier that this isn't the same chip as has been fitted to the old B machine. The 1770 DFS controller (now DFS 2.0) appears to be virtually identical to the old DFS 1.2 which used the 8271 chip. However, there are some important changes both in external operation and for those programming.

Acorn have improved the DFS with additional commands, though sadly one of the old DFS's worst features still remains, that being the limitation of 31 files on a disc. However, the new commands are a welcome sight and now include a *Form command to format discs, this having been glaringly omitted from the old DFS. Other new DFS commands are *Close, *Drive, *Ex, *Free, *Map, *Roms and *Verify.

*Drive as on the old DFS changes the current drive being used, but now incorporates software to allow a 40 track disc to be read by 80 track drives. Ex supplies information about files in the present directory (length, address etc) identical to that of a *Info command. *Free and *Map display information on the amount of space used and unused on a disc and aids the compacting process. Finally, *Roms provides a catalogue of



the sideways Rom sockets and indicates the Rom number, the Rom title and whether the Rom is a service or language Rom or both. The 1770 also contains the Tube code or the second processor.

Though the 1770 DFS is largely compatible with the old 8271 DFS, in that the commands have been extended, there are however firmware differences which will be causing software houses problems. In particular, disc protection in the past has used various *Pokes* to the internal registers of the 8271 which of course is incompatible with the 1770. Initially anyone buying disc software for the B+ should check very carefully that the software will run on the machine.

The use of another single density system is at first surprising, especially when the ADFS is available on the Electron. However, it's to Acorn's credit that it did not go for an ADFS implementation as had been expected, because this would have caused all manner of problems and made the machine largely incompatible.

The other new commands relate to the extra memory provided with the B+. The 32K of extra Ram is split between 20K shadow Ram and 12K sideways Ram. The advantage of shadow Ram is that memory, which previously on the 'B' would be taken up with screen display (ie, 20K Mode 0), is now left free for use. The user can decide whether a shadow screen is to be used and either directly enter a shadow screen mode by typing *Mode* followed by the shadow screen equivalents of Modes 0 to 7 which are 128 to 138, or by entering *Shadow, which forces the operating system to enter shadow mode on any subsequent screen mode change. This can be turned off by *Shadow 1. The same can be achieved by using a *FX114 command.

Shadow mode is retained after a soft break but is reset on a hard break. The command has been well thought out and offers maximum compatibility when running software designed for the old Beeb. This facility has to be welcomed and if the B+ is taken up by software houses, it should provide a whole new area of software writing, which has currently pushed the B machine to virtually its limitations.

Finally, 12K of sideways Ram is avail-

able. This is an unfortunate figure but is a consequence of the 84K limit and that 20K of the extra Ram must be used as Shadow Ram for screen displays. However, it's still an improvement on the B and will no doubt be used to good effect. And that's it for the major changes. There are changes within the OS and obviously the memory map, but these are in the main to take account of the shadow Ram.

The B+ comes with a revised user guide which looks even more comprehensive than the previous addition. As with the previous user guide it looks like an excellent reference work but is not suitable for learning programming.

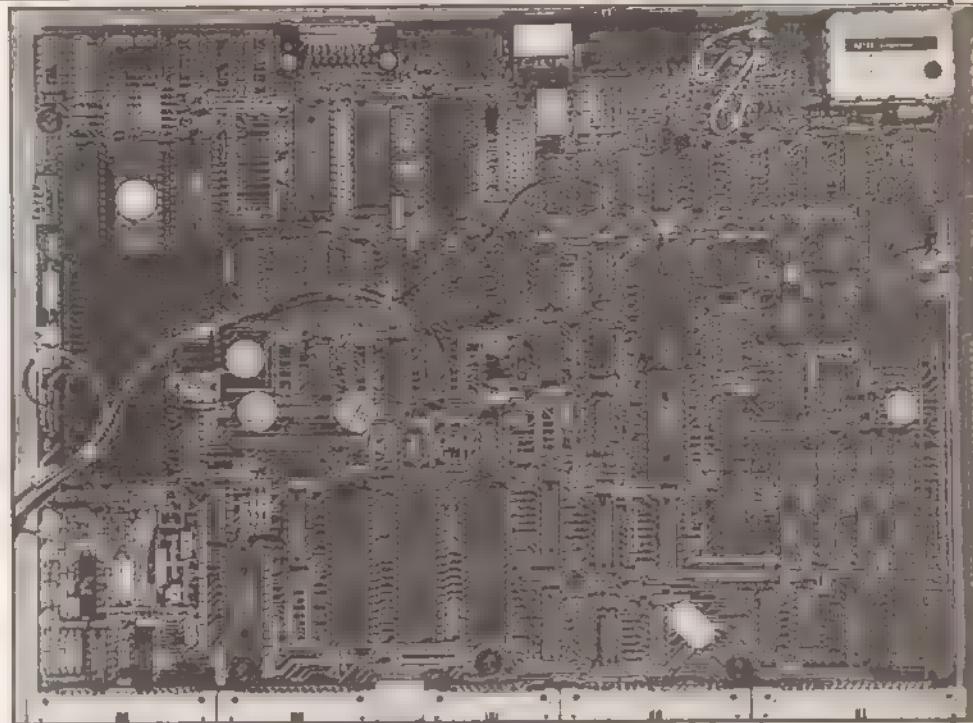
Existing BBC users may be wondering whether they can upgrade to a B+ specification. Considering the new circuit board, an entire upgrade is unlikely, though Acorn admits it is thinking making the board available through dealers. The extra Ram facility is virtually identical to the Aries Ram upgrade and many users will already be using that facility. At the end of the day the differences aren't tremendous enough to make it worth while buying the new version.

In principle I like the B+. It is a well (re)designed machine and is a logical step forward in the BBC system. The sticking point is the price. £499, Acorn argues, is a good price relative to what the old BBC B offers. True enough. What Acorn refuses to acknowledge is that the BBC has been overpriced for far too long. The new machine, though with added extras, is probably cheaper to produce because the manufacturing process is far more automated due to an

almost entirely soldered circuit board. In fact, this is very likely the reason for the redesign as costs on the old B were rising, due to the number of sockets to be worked on by hand.

I can't but wonder who will buy this machine. Few existing BBC owners will throw away their machines as the extras are available and many have already added the sideways Ram or DFS. At a price of £499, the B+ is hardly likely to attract those potential home owners who haven't taken the plunge so far. It seems Acorn's best hope, and probably its intended sales area, will be the education market who may be willing to pay for the extras. Whatever the market for the machine, it is over-priced. At a time when specifications are soaring and prices tumbling (Amstrad CPC664, Atari ST, etc), Acorn is pursuing what seems an almost suicidal pricing policy, one which has already placed the company in financial difficulties.

The B+ is a worthy successor to the B and is a useful stop-gap until a model C appears. As a home micro, the pricing is too out of touch to compete with the likes of the Amstrad 884, which includes a built-in disc drive. But this isn't Acorn's intended market and it will hope that they can still attract the serious user. Here it has a chance as the machine is still unrivalled for its connections to the outside world, possibilities for expansion and performance. But in the end the pricing has to be the crucial deciding factor and frankly I feel it's far too expensive. The B+ is good but at £499 it's a case of too little, too late and too much.



At the helm

Christina Erskine talks to **Nick Bessey**, Commodore's new general manager

"I must be about the only person in Commodore who has never met Jack Tramiel," commented Nick Bessey, Commodore's new general manager and successor to Howard Stanworth.

He seems to see this as an advantage - since it means he is apart from the personality cult that surrounds Tramiel, having joined Commodore from IBM where he was a product manager, a month ago.

With Commodore's European software manager Gail Wellington describing Tramiel's departure from Commodore and subsequent takeover of Atari, as being "like one's parents getting divorced". I asked Nick how it felt to be a stepfather.

"I think you need to take away the personality cults and look at precisely what Commodore has achieved in the last year - it moved to Corby and set up a powerful manufacturing plant there, it announced and launched the PC10 and PC20 in a mature way and with plenty of supply. People I know in Commodore have a very clear idea about the combination of being the largest producer of microcomputers and with the broadest range.

"Our challenge now is to formulate a marketing programme, which gets all the products readily available in spite of the mutually exclusive split in the computer market between consumer and business systems.

"The discussions I've been involved in so far have been in the vein of a marketing challenge with our machines - and from that point of view I think discussion about Atari are irrelevant. The new Atari products are relatively limited - from a programming point of view."

The marketing challenge looks even greater in light of Commodore International's announced losses of \$20.8m, blamed on the strong dollar, investment in new products and market uncertainty. The sheer scope ■ Commodore's own range doesn't help it act fast when necessary.

Commodore now presides over a range of micros that is the largest of any manufacturer, from the 'beginners' C18 to the Unix-compatible 900, particularly if you count the forthcoming 128 and Amiga machines. Nick Bessey's appointment, coming so soon after the launch of Commodore's IBM-compatible machines, gave rise to considerable speculation that Commodore would now be concentrating far more on the business market than its home products.

"The business systems area ■ Commodore certainly requires urgent attention, and, yes, frankly, it's a key issue; the PC10 and PC20 must be marketed very strongly."

The formula of strong marketing with plenty of stock is to be carried over to the launch of the C128, and the built-in disc version the C128D.

"I don't know now if the two machines will be launched simultaneously, since it will depend on quantities of supply at launch time. However, I am confident we can announce them for the last four months of the year - before September if possible.

"What will probably happen is we'll sell the basic 128s initially, and then offer the 128D at competitive prices, for those who feel the built-in disc drive is essential. But it's the compatibility that's the strong point - we have done a lot of market research on the 128 in the US and it has had a very favourable response, particularly because of the compatibility."

However, Nick was unwilling to disclose firm details regarding the price for the machines. "I don't really want to disclose a price - it's about the only thing left that hasn't been disclosed." However, an equivalent to the German price of DM1198, which is about £315, is expected.

And what of Commodore's other new machine, the Amiga? Exciting rumour has suggested that the 256K Ram, 128K Rom machine will outdo anything seen so far for the home market.

It is the Amiga, too, that has caused such consternation between Atari and Commodore, over the graphics chip Daphne. Atari filed a suit against Commodore claiming the chip had been commissioned to graphic design company Amiga by Atari. Commodore then bought the company, and thus its machine with it.

The Amiga is now set for launch next year, not the end of this year, as has been reported

previously. Could Atari's charges affect delays in its release?

"It will be next year when we bring the Amiga out in the UK, but the launch date is affected by our ability to produce the machine, not by lawsuits. I don't think the lawsuits have any effect on Commodore releasing the machine."

"I was absolutely astonished by the Amiga when I first saw it. Its graphics are an overwhelming strong point, just in terms of sheer quality and flexibility. Certainly there will be the opportunity to sell the Amiga ■ specialists - graphics designers and so on."

"It will also appeal to the experienced hobbyists among home computer users who want to compute with something extra in terms of high speed programming graphics."

I asked about pricing levels for the Amiga, reports of somewhere between \$700 and \$900 being the most popular at the moment.

"I honestly don't know what the exact price will be. Around just under \$1000 reflects the threshold for that type of machine, and I'm sure the scale of production we plan will make for competitive prices."

How will the arrival of the Amiga affect the 128? With one relying largely on traditional technology, and the other on new, is there not a danger that the Amiga might not overwhelm the 128?

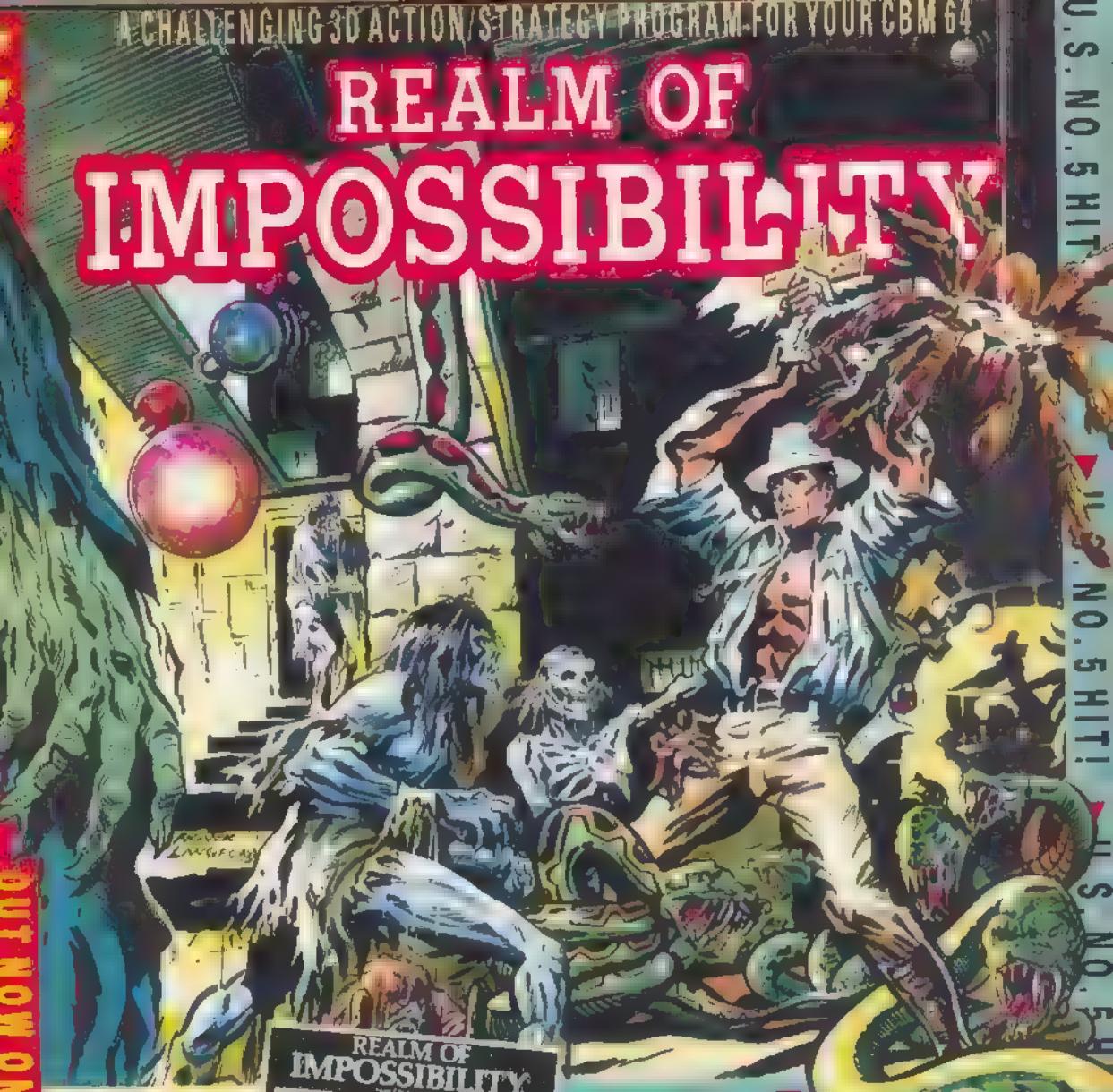
"Oh no, the 128 will certainly survive the arrival of the Amiga. They are for different markets, and the pricing will dictate that to a large extent. The 128 is for ■ upgraders, primarily. The Amiga will overall be more specialist, more state-of-the-art."

Top priority for now, however, has to be the marketing of current products, the ■ and IBM compatible in particular, especially with regard to the latest financial figures.



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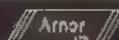
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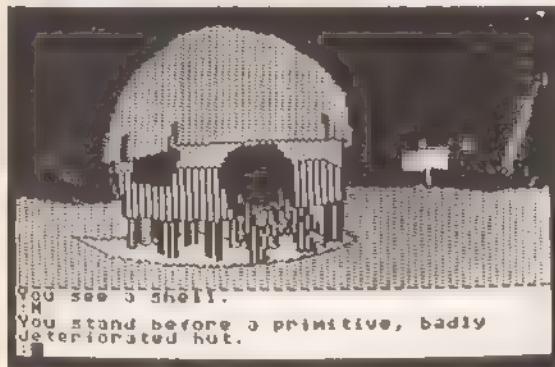
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Software Reviews

Forgetful

Program *Mindshadow* **Price** £18.99 **Micro Commodore 64/Disc Drive Supplier** Activision, 18 Harley House, Marylebone Road, London NW1.

In the computer industry, the old saying "You get what you pay for" can be



particularly apt. *Mindshadow* is the perfect example of this phenomenon. Although not cheap, it is a very slick and well-thought-out package. The disc not only includes the adventure, but also a "living tutorial" and a "sneak preview". The living tutorial would be great for novice adventurers as it introduces and explains the "art of adventuring". The sneak preview is just a small look at Activision's other disc-based adventure "The Trace Sanc-
tion". Now, down to the game.

The purpose of the game is certainly original - no orc-

bashing or treasure seeking here. All you have to find out is who you are. This isn't so simple as you start life with no possessions, stranded on a desert island. From there, you have to travel the world in a long search to reveal your past.

Each of the locations has a graphics picture and five or six lines of descriptive text. For change, I really thought the graphics were worth-

while, and they certainly added to the atmosphere. The sophisticated parser also makes this a great game for the beginner as the computer understands a wide variety of commands. One of the more interesting features is a "help" function which relies on an old Condor to pass on various clues and hints. I can't say the wretched bird helped me much, but perhaps you'll have more luck.

A big, user-friendly adventure for rich Commodore 64 owners.

Tom Hussey

ing somewhere to be developed. Advanced Memory Systems has now issued *Utilities*.

Present users of the mouse will recognise *AMXart2* and *Icon Design* on the initial menu, but the *Utilities* disc has an additional six choices. *AMXart2* is identical to *Art* in the original package, but now has *Load Files* as an option on the pull-down file menu. Along the base of the drawing area are 32 boxes containing various fill patterns. If you are drawing a house, for instance, instead of laboriously drawing each brick in the wall, it is only necessary to

Mousey

Program *AMX Utilities* **Price** £14.95 **Micro BBC B Supplier** Advanced Memory Systems, Green Lane, Appleton, Warrington WA4 5NG.

The original *AMX* Mouse package, which appeared earlier this year, provided some excellent software to design icons and draw detailed pictures as well as the mouse and system Rom, but there was always the feeling that much more powerful software was wait-

Flushed

Program *Maverick* **Price** £5.95 **Micro Spectrum 48K Supplier** Cases Computer Simulations, 14 Langton Way, London SE3 7TL.

Before James Garner started his love affair with answer-phones in *The Rockford Files*, he played a flashy card sharp in a TV western called *Maverick* - now CCS are using this as the title of (guess what) a Pok-

er simulation.

The game pits you against five other players in a session of Jackpot Draw Poker.

Much of the fun of playing Poker live is the interaction between each player, and I suspect, the fact you are risking hard earned cash at the same time. And although CCS have programmed each of the computer players to react in different ways, I quickly came to the conclusion that *Maverick* is a poor substitute for the real thing.

John Cook

select the brick pattern with the mouse move it over the wall and this proceeds to lay with little bricks automatically.

Choosing the option *Pattern*, it is possible to design your own fills and save the new selection to disc.

With the original software, it was only possible to have the extremes of small screen dumps or full A4 size. If you have a Rom like *Printmaster* from Computer Concepts, you can now use a utility called *XdGen* to incorporate a screen dump command allowing you to produce intermediate sized drawings. If you save a picture with the name *Pic1*, it can be loaded back in your own programs using *Deak* and then *Load Pic1*. An option in *Utilities* called *Strip* removes the icons from the outside allowing you to save just your artwork. This can then be called from inside your own

placed on the screen, which means it is now possible to design circuit diagrams or sheet music using the icons included which represent electronic components and musical notation.

Other features that have been included are routines to turn sections of your artwork through 90 or 180 degrees, to copy or reflect it, and an option to draw ellipses and arcs. There is even a program called *Sketch* that draws in colour, although I didn't find this as useful as the other programs.

Although comparisons will be made between this and MacPaint - indeed the model BBC looks quite like a Mac when running this software - it should be remembered that the Apple machine has four times as much Ram as the BBC, and also costs well over four times the price. I still feel that the initial price of the *AMX* mouse is rather high,



ELECTRONIC MUSIC !

Andante

software.

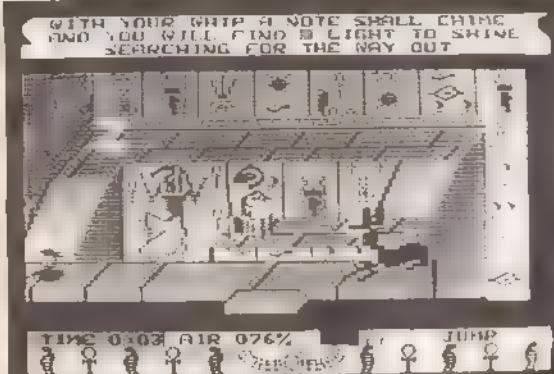
With *Utilities*, you can design icons to use in your own programs. Either the icons on Rom or those designed by yourself can be loaded in and

but *Utilities* is certainly worth every penny of £14.95.

John Scriven



Software Reviews



Trapped

Program *Entombed* Price £9.98 Micro Commodore 64 Supplier Ultimate, The Green, Ashby de la Zouch, Leicestershire.

When you ask Ultimate why they don't do *Sabre Wulf* or *Knight Lore* for the C64, they say things like, "err... well... we don't know much about the machine really... um...". If only more software houses were as ignorant.

First they came up with *Staff of Karnath* - an OK game, but I never liked messing around with all those spells. Now, the follow up has been released going by the name of *Entombed*... very aptly named as it happens; I was entombed in my computer room playing it for hours.

Anyway, this time, our hero, Sir Arthur Pendragon, whilst on a 14-day half-board package trip to Luxor, finds himself trapped inside the Great Sphinx - and the air is running out fast.

True to form, Ultimate aren't giving much away in the instructions - you choose from a number of actions by pressing Space, including Jump (for that read hilarious bunny hops), Use Whip and Use Torch. The only thing is... you have to find the last two before you can use them.

The screen display is side on scrolling 3-D, as in *Staff of Karnath*, colourful, beautifully designed, with lots of local colour such as hieroglyphics, statues of Anubis and the like. The nasties include wandering mummies and tap dancing scorpions, which zap your life force - but can be

dispelled with a crack of the whip.

So, you wander around, ducking into various crypts, attempting to fathom out exactly what you are trying to do - whipping at everything that moves and swearing quietly and not so quietly at the Ultimate team who devised this particular warped form of torture. Definitely a must for any adventurer's collection.

John Cook



Exhaustive

Program *GraphiQL* Micro QL Price £34.95 Supplier Talent Computer Systems, Curran Building, 101 St James Road, Glasgow.

A painting sold in auction some time ago for a couple of million pounds - wouldn't it be nice if you could use your QL to create a similarly valuable masterpiece? If wishes were horses, but Talent Computer Systems is going to do its best to help you with its newly-released QL utility.

It is the best graphic utility to appear for the QL so far and is based on Talent's successful *Panorama* utility for the Commodore 64.

Mind you, Talent charges you a pretty penny for helping to bring out the hidden artist in the QL user.

What do you get? Two cartridges come in the large case, along with a 63-page manual. One of the cartridges contains the main program, plus a very well-documented printer dump utility to help you transfer your master-

piece to paper. The second cartridge is a little bundle of demo screens that show you what is possible with *GraphiQL* - you can load them in and mess about with them to your heart's content. The manual is pretty exhaustive, covering all the commands available as well as advice on drawing with a computer and photographing the results.

The 50-odd commands cover most of what the artist should want to do with a QL. You'll find freehand drawing possible, as well as rubber banding and instant circles, boxes and - unusually - ellipses. Colours can be instantly selected and changed, as well as the shape and width of the 'brush' - there's even an 'airbrush' available, which gives a random 'spatter' effect.

One very useful feature is a doodle pad, which allows you to try out ideas before transferring them to the main picture. This pad may also be used to define textures. Twenty-six of these can be

designed and then assigned to the brush to be painted into the picture - they can also be saved for future use, so quite complex patterns can be built up, as well as often-used shapes, like trees or houses.

Full colour control is available, with swapping and merging being possible. As well as all this, you can magnify the screen - only to times, though - for detail work, and rotate any work on the screen to your satisfaction. Drawing, however, despite all the facilities available, can be a rather tiresome operation. Inspiration can dry up pretty quickly while waiting for the cursor to crawl across the screen.

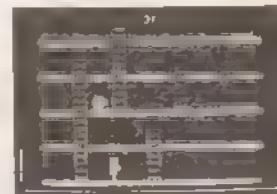
Despite the speed restrictions (this, I'm sure, is a function of the machine itself), and despite the high price which one must pay for almost any QL software, Talent's new utility should become the standard graphics package for the QL.

Tony Bridge



but they just will not respond, particularly the up/down controls.

Not only is it irritating sitting at the bottom of the ladder tapping away at the letter 'A' waiting for Digger to pull his finger out, but it makes you easy prey for the nasties, and makes the game unplayable.



It's a complete reverse of the normal situation - for once there are a lot of very nice touches, but the basic algorithm that drives the game is flawed.

It could be rewritten to increase the frequency and efficiency of keyboard scanning, even at the cost of the speed of movement of the monsters, it would be a much much better game.

Tony Kendle



Easy prey

Program *Digger Barnes* Price £6.95 Micro CPC 464 Supplier Cable Software, 52 Limbury Road, Luton, Beds LU3 2PL.

Even though this is only a rehash of the ageing *Panic* arcade game - run up and down ladders, bang holes in platforms so that the pursuing monsters fall in, etc. at first sight this looks like quite an attractive buy.

The game is not exorbitantly priced, has a witty title - playing on the *Dallas* character of the same name - and well-designed cassette inlay and graphics.

The monsters, especially, are particularly nasty looking and very fast.

The background is less impressive, though, with simple straight lines for platforms, ladders and little else. It looks absurdly simple when compared to the likes of Virgin Game's *Sorcery*.

Unfortunately the game is let down completely by the keyboard control. The actual choice of keys is quite good

Worthwhile

Program Softaid Micro Commodore 64 Price £4.99 **Supplier** Band-Aid Trust, c/o Stoy Hayward, 11 Baker Street, London W1.

If you've been reading the computer magazines recently, you will have heard of Softaid. It is the computer industry's answer to Band-Aid, a selection of ten games sold at a ridiculously low price. Not only that, the tape also contains the number one single "Do They Know It's Christmas?" (I'll leave you to decide whether that's good or bad). All the profits to the Ethiopian Famine Relief Appeal.

The games include: *Gumshoe* - Sort of platform game. Great fun. Love the way you can mow down the baddies with your machine-gun, gangster style. *Beamrider* - Fairly basic shoot-'em-up. Fast action, though, and good sound effects. *Star-Trader* - A game of space-trading and double-dealing, complete with 3-D battles. Similar to *Elite*, but not as good. *Gyropod* - Weird, space-shoot-out game. Not bad, but

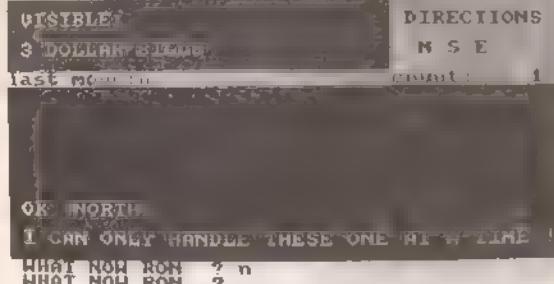
not brilliant either. *China Miner* - *Manic Miner* clone. Guide Miner Wally through thirty very hard levels. You'll probably recognise some of the characters from other popular games. Pretty addictive. *Kokotan Wilf* - A massive, multi-screen, joystick adventure. Journey through time meeting dinosaurs, spaceships and all. Fairly good but I didn't like the player control. *Gilligan's Gold* - Another platform game. Explore old mine-workings and collect gold. OK but unoriginal. *Fred* - Maze game set in ancient pyramids. Avoid hazards and gather treasure as you search catacombs. Reasonable. *Falcon Patrol* - One of my all-time favourite games. Great, fast, supersonic jet-action. *Flak* - American game. Dodge flak as you shoot down enemy installations. Good, but might lack lasting appeal.

I reckon every Commodore 64 owner should buy a copy of this tape. Not only would they receive an excellent selection of ten games, but they would also be donating money to help a most worthwhile cause.

Tom Hussey



IN UNIDY ROWS THEY LIE. FRAGILE WOODEN CROSSES BEARING NAMES OF THE IMMORTAL & THE IMMORAL. FROM CALAMITY JANE TO JESSE JAMES THEIR BONES MINGLE IN FINAL ACCORD



Essential

Program Brawn Free Price £2.00 **Micro CPC 464 Supplier** Nemesis, 10 Carlow Road, Ringstead, Northants.

Fans of the Nemesis text adventures will certainly not be disappointed by this latest addition to the range even if it is sold at a budget price. Here again

are the superb sound effects, the excellent screen layout, the bizarre plot, the psychedelic settings and the absolutely outrageous sense of humour.

This game has (superficially) a wild west theme, although the good old USA often gets rather jumbled in with our own Rochdale cowboys, and every opportunity is taken to squeeze a groan out of the innocent player with dreadful puns.

Indeed, I can't remember when I last laughed out loud at a adventure game (unless as a comment on the standard of spelling) - try this one: "Big John Wayne was a masochist. He used to like a cold bath in the mornings - so he didn't have one".

There's really not much more you can say. Technically accomplished, if anything slightly more testing than the earlier games, spilling over with richness of imagery that obviously comes from years

of watching cheesy westerns on Saturday afternoons and so packed full of originality it is like a breath of fresh air. Nothing is taken seriously and there is not one Great Gnome of Tharg in sight, the spelling mistakes are deliberate, the humour so ridiculous that it is a joy to review, and an even more ridiculous price tag makes it an essential buy.

Tony Kendle



Skeleton plot

Program Colossal Cave Adventure Price £7.95 **Micro CPC 464 Supplier** Duckworth, The Old Piano Factory, 22 Gloucester Crescent, London NW1 7DY.

Pete Gerrard and the team at Ducksoft have been churning out a range of quite reasonable text adventures, comparable in some ways to the Quilled Spectrum games but with the technical know-how supplied by Pete's own book on writing adventures.

The problem is that here is already a definitive, and, I have to say, much superior version of the game available for almost all home micros at just a couple of pounds more. For instance, Ducksoft have made a point that their version sticks exactly to the original layout of the game, by

which I suppose they mean that it does not have the 70 extra locations, voluminous prose, or attractively redesigned text of the Level 9 version of Colossal.

Ducksoft's effort is quite competent, with adequate response speeds, etc, but playing it seems to be like reading a Reader's Digest précis of a great novel - the skeleton of the plot is there but none of the nuances. Unless you are very hard up or are an adventure purist who regards any tampering with the original as an affront, you get what you pay for, ie, less.

Tony Kendle



Puzzles

Program Mystery of the Java Star Price £5.75 **Micro CPC 464 Supplier** Shards Software, 189 Eton Road, Ilford, Essex IG1 2UQ.

Shards have got themselves a good reputation for trying to do something different in the clichéd world of computer games. For those that don't know, their programs usually come under some heading such as 'educational adventure', but usually they consist of series of puzzles rather than what anyone would think of as a true adventure.

I must confess that it is a formula that tends to leave me

cold but that's only personal preference - I can recognise a well implemented idea and some people swear by these games. You can't criticise the value for money considering that there is over 100K of code on the tape.

Advertised as a 'game for all the family', it probably has more in common with Sunday afternoons playing Monopoly than with your usual solitary computer fare.

Indeed although you can see where the educational element comes in, this is a bit underplayed and it would probably work better with a teacher or parent at hand to build upon the ideas presented in the game.

Tony Kendle



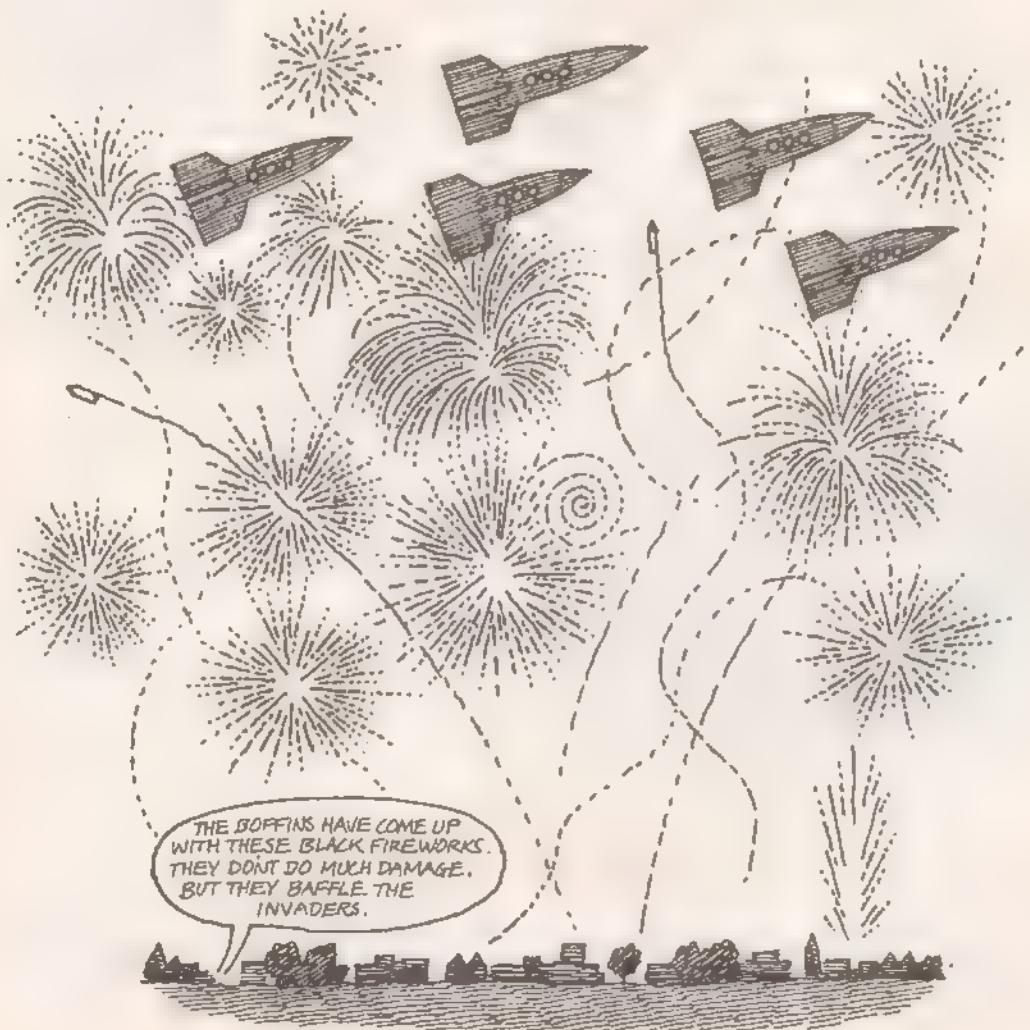
Invaders

Repel all borders ■ this all-action shoot 'em up for
the Sinclair QL by G R Taylor

It is bonfire night on the Planet Zog, and they plan to celebrate by turning Earth into one big Roman Candle! Only you can save us as you ma-

neuvre your sight using the cursor keys (additionally pressing Space to move faster), launching missiles using Enter. Be quick, as the alien ships will

fire at your laser base as they land - each time it is hit, the effectiveness of the missiles decreases. Are you up to the challenge of Invaders?! Have fun.



```

100 MODE 4
110 REMark invader
120 REMark by SR Taylor
130 intro
140 set_screens
150 initialise
160 game
170 :
180 DEFine PROCedure set_screens
190 WINDOW 512,256,0,0:CLS
200 WINDOW 448,180,32,16
210 OPEN #7,con_448x30a32x196
220 OPEN#4,scr
230 OVER -1
240 BORDER 1,4:PAPER 0:CLS
250 FOR n=1 TO 75
260 INK RND(5 TO 7)
270 POINT RND(180),RND(100)
280 END FOR n
290 INK 7
300 PAPER #7,4:INK #7,1
310 CLS #7
320 FILL 1:CIRCLE 92,0,2:FILL 0
330 SCALE #7,40,0,0
340 scores
350 END DEFine set_screens
360 :
370 :
380 DEFine PROCedure game
390 :REPeat cycle
400 move_invader
410 END REPeat cycle
420 END DEFine game
430 :
440 :
450 DEFine PROCedure move_invader
460 : If aliens=0 THEN contact="ALIENS DEFEATED":scores:tune:fin
470 CURSOR bx,by,-5,-5
480 PRINT "+"
490 CIRCLE ix,iy,1,4,0
500 ix=ix+RND(-spd TO spd)
510 iy=iy+RND(1 TO spd)
520 IF iy<0 THEN spd=spd+.1:build_
  bomb:iy=100:ix=RND(180):
  aliens=aliens-1
530 IF ix>180 THEN ix=ix-10
540 IF ix<0 THEN ix=ix+10
550 f=RND(4)
560 CIRCLE ix,iy,1,4,0
570 IF shots=0 THEN
  spd=25:60 TO 640
580 IF f=4 THEN fire
590 shot=0
600 CURSOR bx,by,-5,-5
610 PRINT "+"
620 poll
630 IF shot=1 THEN shoot
640 END DEFine move_invader
650 :

660 :
670 DEFine PROCedure fire
680 attack=RND(10)
690 LINE ix,iy TO B7+attack,0
700 BEEP 5000,255,10,100,-1,15
710 LINE ix,iy TO B7+attack,0
720 IF attack=8 THEN BEEP 0,255,
  100,5,5,3:contact="DAMAGED"
  SUSTAINED*:power=power*.9:
  skill=INT(skill*.9):scores:
  FOR n=6 TO 9:CIRCLE 92,0,n:
  CIRCLE 92,0,n:NEXT n:
  contact$="READY":scores:BEEP
730 END DEFine fire
740 :
750 :
760 DEFine PROCedure poll
770 key=KEYDOWN()
780 SElect ■■■ key
790 =2
800 bx=bx-4
810 =66
820 bx=bx-12
830 =16
840 bx=bx+4
850 =80
860 bx=bx+12
870 =4
880 by=by+4
890 =68
900 by=by+12
910 =128
920 by=by-4
930 =192
940 by=by-12
950 =1
960 shoot
970 END SElect
980 END DEFine poll
990 :

1000 :
1010 DEFine PROCedure shoot
1020 IF shots=0 THEN contact="NO
  MISSILES":scores:RETurn :ELSE
  contact$="MISSILE LAUNCHED"
1030 shooting=1
1040 shots=shots-1:scores
1050 CURSOR bx,by,-5,-5
1060 PRINT "+"
1070 strike=0:sx=92:sy=0
1080 BEEP 0,0,20,57,1
1090 dx=ABS(bx-sx)
1100 dz=dx*power/((ABS(bx-sx)+by)/12)
1110 IF bx<sx THEN dx=-dx
1120 dy=(by-sy)*power/(
  (ABS(bx-sx)+by)/12)
1130 REPeat loop
1140 syy=sy:sxx=sx
1150 sz=sx+dx:sy=sy+dy
1160 LINE sxx,syy TO sz,sy
1170 LINE sxx,syy TO sz,sy
1180 evade
1190 IF sy>by THEN BEEP:EXIT loop
1200 END REPeat loop
1210 IF bx>ix-(skill+1) AND bx<(ix+
  (skill+1)) AND by>iy-(skill+1) THEN
  contact$="CONTACT":hit:
  ELSE contact$="NO CONTACT":miss
1220 END DEFine shoot
1230 :
1240 :
1250 DEFine PROCedure hit
1260 strike=1
1270 score=score+INT((100/skill))
1280 pop
1290 END DEFine hit
1300 :
1310 :
1320 DEFine PROCedure initialise
1330 ix=RND(180):iy=110:REMmark
  invader co-ords
1340 bx=92:by=50:REMmark sight co-ords
1350 score=0
1360 aliens=20-INT(skill/2):REMmark
  more aliens at higher
  skill levels
1370 parts=0:REMmark when parts=8
  bomb explodes
1380 shots=15
1390 spd=2:REMmark speed of spacer
1400 power=1:REMmark radius of blast
  and speed of missiles
1410 contact$="READY"
1420 scores
1430 popp=0:REMmark flag for
  missile explosion
1440 END DEFine initialise
1450 :
1460 :
1470 DEFine PROCedure pop
1480 BEEP 0,255,210,1500,1,5,11,0
1490 popp=1
1500 FOR nn=1 TO skill
1510 FOR nn=1 TO skill
1520 IF ix<bx+skill AND ix>bx-skill
  AND iy<by+skill AND iy>by-skill
  AND popp=1 THEN strike=1
1530 IF strike=0 THEN evade
1540 INK 7
1550 CIRCLE bx,by,nn
1560 END FOR nn
1570 END FOR nn
1580 CURSOR bx,by,-5,-5
1590 PRINT "+"
1600 scores
1610 popp=0
1620 IF strike=1 THEN explode
1630 BEEP
1640 END DEFine pop

```

```

1850 :
1860 :
1870 DEFine PROCEDURE explode
1880 contact$="TARGET DESTROYED"
1890 aliens=aliens-1
1900 scores
1910 BEEP 0,255,210,1500,1,5,11,0
1920 CIRCLE ix,ly,1,4,0
1930 FOR n=1 TO 2
1940 FOR nn=2 TO 12
1950 INK 7-INT(nn/3)
1960 POINT ix+nn,ly:POINT ix,ly+nn:POINT
    ix-nn,ly:POINT ix,ly-nn
1970 POINT ix+nn/2,ly+nn/2:POINT ix+nn/2,
    iy-nn/2:POINT ix-nn/2,ly+nn/2:
    POINT ix-nn/2,ly-nn/2
1980 END FOR nn
1990 END FOR nn
2000 scores=scores+INT((100/skill))
2010 INK 7
2020 contact$="READY":scores
2030 spd=spd+.1:ix=RND(180):iy=105:
    CIRCLE ix,ly,1,4,0
2040 END DEFine explode
2050 :
2060 :
2070 DEFine PROCEDURE evade
2080 CIRCLE ix,ly,1,4,0
2090 ix=ix+RND(.5spd):iy=iy-RND(.5spd)
2100 IF popp=1 ■■■ shooting=1 THEN GO ■■■ 1920
2110 IF iy<0 THEN spd=spd*.1:ibusy=1
    ly=100:ix=RND(180):aliens=aliens-1
2120 IF ix>185 THEN ix=ix-10
2130 IF ix<0 THEN ix=ix+10
2140 CIRCLE ix,ly,1,4,0
2150 END DEFine evade
2160 :
2170 :
2180 DEFine PROCEDURE miss
2190 pop
2200 contact$="READY"
2210 scores
2220 END DEFine miss
2230 :
2240 OVER 1:FOR cn=6 TO 21:CSIZE 3,1:
    CURSOR cn+20,cn;INK B-cn/3:PRINT$*
    "NO ALIENS TODAY, THANKS":END FOR cn:
    INK 7:CURSOR cn+21,cn+1:PRINT$*
2250 BEEP
2260 CSIZE 2,0:AT 7,1:INPUT$*
    "INSTRUCTIONS Y/N?":$y$8
2270 IF $y$="Y" OR $y$="y" THEN instructions
2280 CSIZE 2,0:AT 10,1:INPUT$*select skill
    level l(hard):!":! TO 10(easy):!,skill
2290 IF skill>10 OR skill<1 THEN GO TO 2150
2300 END DEFine intro
2310 :
2320 :
2330 DEFine PROCEDURE build_bomb
2340 parts=parts+1
2350 contact$="ALIEN NO \"$parts$ LANDED"
2360 scores
2370 FOR busb=$x TO 185 STEP 4
    CIRCLE busb,2,1,4,0
2380 CIRCLE busb,2,1,4,0
2390 END FOR busb
2400 construct
2410 :
2420 contact$="READY"
2430 scores
2440 END DEFine build_bomb
2450 :
2460 :
2470 DEFine PROCEDURE construct
2480 SELECT 04 parts
2490 =1
2500 WINDOW$*,30,20,440,175:SCALE$*
    4,30,0,0: BORDER$4,1,2:CLS$4
2510 = REMAINDER
2520 fit
2530 END SELECT
2540 END DEFine construct
2550 :
2560 :
2570 DEFine PROCEDURE fit
2580 BORDER$4,1,2
2590 SELECT 04 parts
2600 =2 : FOR p=0 TO 10:LINE$4,0,p
    TO 100,p:END FOR p
2610 =3 : FOR p=11 TO 20:LINE$4,0,p
    TO 100,p:END FOR p
2620 =4 : FOR p=21 TO 30:LINE$4,0,p
    TO 100,p:END FOR p
2630 =5 : PRINT$888;"BOMB"
2640 =6 : detonate
2650 END SELECT
2660 END DEFine fit
2670 :
2680 :
2690 DEFine PROCEDURE detonate
2700 contact$="ALIEN VICTORY"
2710 scores
2720 FOR n=1 TO 30
2730 BEEP 500,n
2740 RECOL$4,2,3,4,5,6,7,0,1
2750 WAIT n
2760 BEEP 0,255,210,1500,1,5,11,0
2770 FOR n=1 ■■■ 4
2780 SCROLL-2:SCROLL 2
2790 REIT n
2800 BEEP 0,255,210,1500,1,5,11,0
2810 FOR n=1 TO 30
2820 PAPER 2:SCROLL-7
2830 NEXT n
2840 fin
2850 END DEFine detonate
2860 :
2870 :
2880 DEFine PROCEDURE fin
2890 PAPER 0
2900 CLS
2910 OVER 1:FOR cn=6 TO 61:CSIZE 3,1:
    CURSOR 3#(cn)+120,2#(cn)+60:
    INK ABS(100-COS(cn)):PRINT$*
    "END OF GAME":END FOR cn:INK 7
2920 BEEP 0,0:PAUSE 20:BEEP 0,1:
    PAUSE 30:BEEP
2930 AT 6,3:INPUT$*ANOTHER GAME ?Y/N?":$t$8
2940 CSIZE 2,0
2950 IF $t$="Y" OR $t$="y" THEN RUN:
    ELSE CLOSE$4:CLOSE$7:STOP
2960 END DEFine fin
2970 :
2980 :
2990 DEFine PROCEDURE instructions
3000 CSIZE 3,1:CLS$PRINT$* "I":$t$1:
    CSIZE 1,1:PRINT$* "by
    ■■ Taylor":CSIZE 2,0:tune
3010 PRINT$PRINT$IT IS BONFIRE NIGHT ■■
    THE PLANET ZOG AND THEY PLAN TO
    CELEBRATE BY TURNING YOUR PLANET
    INTO A VERY BIG ROMAN CANDLE, IF SIX
    ALIEN SHIPS LAND THEY WILL ASSEMBLE
    AND DETONATE THEIR ATOMIC DEVICE.
    USE CURSOR KEYS AND SPACE BAR
    TO MOVE YOUR SIGHTS, ENTER TO
    FIRE, IF THEY HIT YOUR BASE THE
    SPEED OF YOUR MISSILES WILL BE REDUCED.
    "PRINT" ANY KEY TO START"
3020 PAUSE:CLS
3030 END DEFine instructions
3040 :
3050 :
3060 DEFine PROCEDURE tune
3070 OVER 0
3080 RESTORE
3090 FOR n=1 ■■■ 16
3100 READ a,b
3110 BEEP 0,a$15:PAUSE b
3120 END FOR n
3130 BEEP
3140 END DEFine tune
3150 :
3160 DATA 25,20,12,20,15,10,17,10,20,10
3170 DATA 5,20,12,20,15,10,17,10,20,10
3180 DATA 5,20,12,20,15,10,17,10,15,10
3190 DATA 20,50

```

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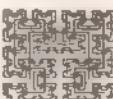
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Into code . . .

This week how to use Compiler on your own programs - plus a demo game - all from A Mehmod

Now you have typed in the compiler, you can use it on your own programs. To enter programs simply enter the listing of your Basic program to be compiled as you would enter a normal program, except the lowest line number you can use is 1000, because the compiler is stored in the lines 0-999.

Once you have entered your program you must take care of the following:-

i) All *Gosub*'s should be satisfied with *Return* statements.

ii) To return back to Basic you must have a *Return* statement. iii) All machine code routines/sub routines called using the *User* statement must have a *Return* statement within them.

iii) The *Stop* command will cause a direct return to Basic.

Now merge your program with Compiler. Once all the above has been done the program is ready to be compiled. To compile the program simply run the compiler by entering *Run*. The word *Compiler* will appear on the screen and there will be a slight pause, if the message 'Check Sum error check Data...' appears on the screen, it means that the data entered in lines 980-984 is incorrect and therefore it should be checked very carefully and corrected. The compiler can then be run again. If all is well the compiler will begin to print out the Commands, Statements and Functions as they are being compiled.

Should there be an error in your Basic program the compiler will print a suitable error message, and tell on which line the error occurred so that it can be corrected and the compiler run again.

If no errors occurred through the whole program, the message 'Compiled' will appear on the screen together with another message telling you two addresses between which the machine code can be stored. A suitable address between the two addresses should be entered; it is advised to choose the lowest of the two addresses to store the code unless you have another machine could program stored there. Once you have entered the address you wish your code to be stored at there will be another pause (dependent on the size of the program, normally between 1 min - 10 mins) after which the screen will be cleared and another two values will be printed. The first value will be the start address of your machine code and the second value will be the length of your machine code.

It is advised that you save both your Basic and machine code programs onto tape before you attempt to run the machine code program. It should be noted the machine code program will not run

unless the first line of the compiler is in memory, ie, once a program has been compiled a *Line 0* will be created which must be present when running the machine code. Once the programs have been saved, the machine code can be tested by using the *User* command as used in Sinclair Basic.

If the 'Out of Memory' error occurs whilst a program is being compiled it means the program you are compiling is too long and therefore it should be split up into subroutines and compiled subroutine at a time. The compiler, when run, erases every thing in the memory therefore if two subroutines are being tested both should be loaded in first and then tested.

Now you are ready for the demo program. Type in the listing of the demo program - then merge with Compiler. Now simply type in *Run*.

The compiler will begin to print out the commands and statements as it compiles them. Once this has been done the compiler will ask you whether you want to store your compiled machine code. Enter a suitable address as told in the instructions of the compiler. There will now be a delay as the compiler loads the machine code into memory. (It will take approx 7½ mins.)

Once the code has been loaded into memory the compiler will print the address of where the code was stored and

its length in bytes. You should now save the machine code as explained in the Spectrum Manual. You should also Save the compiler with your program.

If you *List* the compiler you will find a *Line 0* has appeared and an error will be printed. This is perfectly normal. To run any compiled programs *Line Zero* must be present in your programs, therefore it is a good idea to delete all the compiler and save *Line Zero* for later use by compiled programs. Once you have deleted all the compiler (except *Line Zero*) save the line as you would a normal Basic program. (This can now be used by all compiled programs that are to be run independently of the compiler.)

Although the compiled program will now run independently of the compiler (so long as *Line Zero* is present) it is a good idea to add a little Basic program to your machine code to improve it (you may wish to add instructions to your program or have a title page, etc).

A simple example of what I mean can be seen in Basic program that accompanies the demo program, listing two. If you type in *Go to 9999* the program will save itself together with the machine code and will auto run when loaded.

Note that the second *Save* instruction in *Line 9999* is dependent on where you stored your code, so change this appropriately. Also when running compiled programs, before they have even been loaded you must clear a suitable address. If you do not know how to, type in *Clear 49999* as a direct command and then load in your program as normal.

Compiler is available on tape from me for £2.75 at 30 Webber House, North St, Barking, Essex.

```

S>REM print instructions
10 BORDER 0: PAPER 0: INK 7: CLS
18 PRINT AT 0,10;"DEMO PROGRAM"
30 PRINT AT 10,11;"0 --- UP"
40 PRINT AT 12,11;"2 --- DOWN"
50 PRINT AT 16,11;"0 --- LEFT"
60 PRINT AT 18,11;"P --- RIGHT"
70 PRINT AT 21,6;"PRESS ANY KEY TO PLAY"
80 PAUSE 0
100 REM run machine code
101 CLS
105 PRINT "EAT THE GREEN AND AVOID THE
MAGENTA .": PRINT "YOU ARE THE
WHITE .": PRINT "***EACH SHEET GETS
MORE AND MORE DIFFICULT AND FASTER"
106 PRINT AT 21,6;"PRESS ANY KEY TO PLAY"
107 PAUSE 0
110 LET I=USR addr of code
120 PRINT AT 10,10;"GAME OVER"

```

```

130 FOR F=0 TO 1000: NEXT F
140 GO TO 1
9000 REM load machine code
automatically..... Remember
to clear before loading machine code
9001 BORDER 0: PAPER 0: CLEAR 49999
9002 REM set cap shift on and put UDG
at a safe address
9003 POKE 23675,200: POKE 23676,255:
PDKE 23658,8
9010 LOAD "CODE"
9015 RESTORE
9020 FOR F=USR "A" TO USR "C"+7
9030 FOR F=USR "A" TO USR "C"+7
9035 REM define UDG graphics
9040 READ a: POKE f,a: NEXT f
9050 ■■■ 1
9060 REM data for UDG graphics
9070 DATA B1W 00111100

```

```

9071 DATA BIN 01111110
9072 DATA BIN 11111111
9073 DATA BIN 11111111
9074 DATA BIN 11111111
9075 DATA BIN 11111111
9076 DATA BIN 01111111
9077 DATA BIN 00111100
9078 REM
9080 DATA ■■■ 00011000
9081 DATA BIN 00011000
9082 DATA BIN 00011000
9083 DATA BIN 11111111
9084 DATA BIN 11111111
9085 DATA BIN 00011000
9086 DATA BIN 00011000
9087 DATA BIN 00011000
9088 REM
9090 DATA BIN 10000001
9091 DATA BIN 01000010
9092 DATA BIN 00100100
9093 DATA BIN 00011000
9094 DATA BIN 00011000
9095 DATA BIN 00100100
9096 DATA BIN 01000010
9097 DATA BIN 10000001
9098 REM end of data
9999 SAVE "DEMO" LINE 9000: SAVE
  "DEMO CODE" CODE addr of code,

```

```

length ■ code
1000 BORDER 7; PAPER 0
1001 LET I=10: LET S=0: LET L=3
1005 INK 7; CLS
1010 INK 5
1020 LET C=1: LET F=1
1030 LET A=1+RND+RND+RND
1031 IF A>31 THEN LET A=A-31
1040 LET A1=1+RND+RND
1041 IF A1>21 THEN LET A1=A1-21
1045 ■■■ ATTR (A1,A)=5 THEN LET C=C+1
1050 PRINT AT A1,A;CHR$ 145
1060 LET F=F+1: IF F>11 THEN GO TO 1030
1070 PRINT BT 0,0;CHR$ 83;CHR$ 67;CHR$ 79;CHR$ 82;CHR$ 69;CHR$ 45;5
1080 PRINT AT 0,23;CHR$ 76;CHR$ 73;CHR$ 86;CHR$ 69;CHR$ 83;CHR$ 45;1
2000 LET X=15: LET Y=11
2010 LET N=80
3000 INK B
3005 LET X=X: LET Y=Y
3010 LET Z=CODE INKEY$ 
3019 IF Z=81 THEN LET Y=Y-1: LET N=N-1
3020 ■■■ Z=90 THEN LET Y=Y+1: LET N=N+1
3030 IF Z=79 THEN LET X=X-1: LET N=N-1
3035 IF Z=80 THEN LET X=X+1: LET N=N+1
3040 IF X=0 THEN LET N=N-1
3041 IF Z=32 THEN LET N=N-1
3042 IF Y=22 THEN LET N=N+1
3043 IF Y=0 THEN LET N=N-1
3045 IF N>A THEN LET A=N: POKE
  23560,A: GO TO 3019
3050 PRINT AT Y,X;CHR$ 145: PRINT AT
  Y1,X1;CHR$ 32
3055 BEEP (1000/(L1/101)),(1000/L1)
3060 IF ATTR (Y,X)=5 THEN GO SUB 5000
3070 IF ATTR (Y,X)=3 THEN GO TO 6000
3080 GO TO 3000
5000 LET A=1+RND+RND+RND
5010 LET A1=1+RND+RND
5015 IF A>31 THEN LET A=A-31
5025 IF A1>21 THEN LET A1=A1-21
5030 INK 3
5035 ■■■ ATTR (A1,A)=5 THEN LET C=C+1
5040 PRINT AT A1,A;CHR$ 145
5045 INK 7: PRINT AT Y,X;CHR$ ■■■
5050 LET F=0
5060 BEEP F,F: LET F=F+1: IF F>30 THEN
  ■■■ TO 5060
5065 LET S=S+10
5066 PRINT ■■■ 0,616
5070 LET C=C+1: IF C=11 THEN
  LET I=I+10: GO TO 1005
5080 RETURN
6000 IF I=0 THEN RETURN
6010 LET I=I-1: ■■■ TO 1005

```

Perhaps some American film financiers could use material like this to produce the sort of '80s great-hum' Overall Brewery - Crash Magazine, April '85

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Broadcast quality

Catch those late-night software broadcasts without burning the midnight oil – thanks to Chris Baker

This program allows the user to record radio programmes automatically, by using the cassette remote jack plug from a BBC micro. I

have found the program very useful for recording software broadcasts late at night, or when I can't be around to do it manually.

The program is self explanatory; simply plug the cassette jack plug into the remote socket on any cassette-radio, tune the radio to the desired station, set the machine to record and run the program. Enter the present time, the start and finish times, and the program will switch the recorder on and off at the appropriate moments.

```

10 REM AUTOMATIC RECORDING TIMER
15 REM BY CHRIS BAKER
20*TV255
30MODE 7
40PROCHEADER
50PROCNOW
60PROCSTART
70PROCEND
80PROCAUTO
90END
100REM
110DEFPPROCNOW
120VDU23;8202;0:0:0;
130PRINTTAB(0,3)CHR$131"WHAT TIME IS IT NOW? (24HR CLOCK)"
140PRINT
150INPUT"HOURS ",H
160INPUT"MINUTES ",M
165IFH>23 OR M>60 THEN PROCMISTAKE :RUN
170TIME = H * 360000 + M * 6000
180REPEAT
190PROCCLOCK:PROCDISPLAY
200UNTIL TIME>(H * 360000 + M * 6000)+100
210ENDPROC
220PROCSTART
230PRINTTAB(0,7)CHR$131"WHAT TIME DOES THE PROGRAM START?"
240PRINT
250INPUT"HOURS ",SH
260INPUT"MINUTES ",SM
265IFSH>23 OR SM>60 THEN PROCMISTAKE :RUN
270ENDPROC
280DEFPPROCDEND
290PRINTTAB(0,11)CHR$131"WHAT TIME DOES THE PROGRAM END?"
300PRINT
310INPUT"HOURS ",EH
320INPUT"MINUTES ",EM
325IF EH>23 OR EM>60 THEN PROCM

```

```

ISTAKE :RUN
330PRINT"CHR$131"PLEASE SET TAP E TO RECORD AND PLUG IN "CHR$131"REMOTE JACK PLUG. YOU MAY TURN OFF THE "CHR$131"MONITOR."
340ENDPROC
350DEFPPROCAUTO
360REPEAT
370PROCCLOCK:PROCDISPLAY
380UNTIL HR=SH AND MIN>= SM
390*FX137,1
400REPEAT
410PROCCLOCK:PROCDISPLAY
420UNTIL HR= EH AND MIN>= EM
430*FX137,0
440PRINTTAB(7)CHR$130:CHR$136"RECORDING COMPLETED"
450ENDPROC
460REM
470DEFPPROCCLOCK
480SEC=(TIME DIV 100) MOD 60
490MIN=(TIME DIV 6000) MOD 60
500HR=(TIME DIV 360000) MOD 24
510ENDPROC
520REM
530DEFPPROCDISPLAY
540PRINTTAB(14,20)CHR$141;HR;"":MIN:CHR$134;SEC;""
550PRINTTAB(14,21)CHR$141;HR;"":MIN:CHR$134;SEC;""
560ENDPROC
570DEFPPROCHEADER
580PRINTTAB(9,0)CHR$141:CHR$132:CHR$157:CHR$134;"AUTO RECORDER":CHR$156
590PRINTTAB(9,1)CHR$141:CHR$132:CHR$157:CHR$134;"AUTO RECORDER":CHR$156
600ENDPROC
700DEFPPROCMISTAKE
710PRINTCHR$129"Don't be silly!
":G=GET
720ENDPROC

```

Statistically correct

Number crunching time with this statistics program for CBM 64 by D J Pearl

Straight 'number crunching' is probably one of the best uses you can put any home computer to, and the discipline requiring it you are most likely to encounter is, of course, statistics.

In the absence of a good programmable calculator, this program will produce a range of statistical information from sample data that is input by the user.

As usual, interpretation is left up to the

user, but remember to watch your sample size and keep the power dry.

Program Notes

Line No

20-30	Set border, paper, ink colour	820-860	Input data items, check for valid inputs, update variables
110	Dimension A, V and W	860-880	Print wait message on screen
120-160	Initialise maximum and minimum numbers, zeroise number of data items	880-930	Calculate range
		940-970	Calculate mean
			Sort numbers into descending order
			Calculate median
			Calculate mode
			Calculate variances, standard deviation, mean deviation
			Clear screen and print information
			Option for displaying ordered list of data
			Option to run program again
			Subroutine used in sort procedure

```

10 REM STATISTICS PROGRAM
15 REM
20 POKE 646,1:POKE 53281,0:POKE 53280,0
30 PRINT"@"
110 DIM A(1000):DIM V(1000):DIM W(1000)
120 LET MIN=9999999999
130 LET MAX=-9999999999
140 LET TAL=0
150 LET NUMDAIT=0
160 FOR N=1 TO 1000
170 INPUT "ENTER DATA ITEM ";A$
175 PRINT "@"
180 IF N=2 AND A$="E" THEN LET NUMDAIT=1:
    LET TAL=A(1):LET RANGE=0:LET MD=A(1)
181 IF N=2 AND A$="E" THEN LET MN=0:LET MS=0
    LET MODE=A(1):LET ME=0:LET M5=0
182 IF N=2 AND A$="E" THEN LET PSD=0:LET
    SAMPSD=0:LET VP=0:LET VS=0:GOTO 720
184 IF N=1 AND A$="E" THEN PRINT"ZERO
    ITEMS INPUT"
185 IF N=1 AND A$="E" THEN PRINT"NO DATA
    AVAILABLE":GOTO 900
190 IF A$="" THEN PRINT"YOU HAVE INPUT AN
    EMPTY STRING, LAST ITEM RECORDED WAS ";
    A(N-1)
191 IF A$="" THEN GOTO 170
200 IF A$="E" THEN LET N=1000: GOTO 270
210 IF N=1 AND ASC(A$)<43 OR ASC(A$)>57
    THEN PRINT"YOU HAVE JUST INPUT AN
    INVALID DATA";
214 IF N=1 AND ASC(A$)<43 OR ASC(A$)>57
    THEN PRINT" ITEM ('"";A$;"'')":GOTO 170
215 IF N>1 AND ASC(A$)<43 OR ASC(A$)>57
    THEN PRINT"YOU HAVE JUST INPUT AN
    INVALID"
216 IF N>1 AND ASC(A$)<43 OR ASC(A$)>57
    THEN PRINT" ITEM ('"";A$;"'')":
    GOTO 170
220 LET A(N)=VAL(A$)
230 LET NUMDAIT=NUMDAIT+1
240 LET TAL=TAL+A(N)
250 IF A(N)<MIN THEN LET MIN=A(N)
260 IF A(N)>MAX THEN LET MAX=A(N)
265 PRINT"@"
270 NEXT N
280 PRINT"MINIMUM",TAB(8);"PLEASE WAIT"
290 LET RANGE=MAX-MIN
300 LET MN=TAL/NUMDAIT
310 REM SORT PROCEDURE
320 FOR X=1 TO NUMDAIT
330 FOR Y=1 TO NUMDAIT-1
340 IF A(Y)>A(Y+1)THEN GOSUB 420
350 NEXT Y
360 NEXT X
370 REM MEDIAN
380 LET M1=INT (NUMDAIT/2)
390 IF M1=NUMDAIT/2 THEN LET O1=M1:
    LET O2=M1+1
395 IF M1>NUMDAIT/2 THEN LET MD=:
    (A(O1)+A(O2))/2
400 IF M1<NUMDAIT/2 THEN LET P0=M1+1:
    LET MD=A(P0)
410 GOTO 460
420 LET T=A(Y)
430 LET A(Y)=A(Y+1)
440 LET A(Y+1)=T
450 RETURN
460 REM MODE
470 LET ZEROC=0
480 LET V(1)=1:LET W(1)=A(1)
490 LET UM=0
500 FOR N=1 TO NUMDAIT
510 LET V(N)=1:LET W(N)=A(N)
520 IF W(N)=0 THEN LET ZEROC=ZEROC+1
530 IF A(N)=A(N+1) AND ZEROC>1 THEN
    V(1+UM)=V(1+UM)+1:LET W(1+UM)=A(N):
    NEXT N
531 IF A(N)=A(N+1) AND ZEROC>1 THEN
    GOTO 560
540 LET UM=UM+1
550 NEXT N
560 FOR X=1 TO NUMDAIT
570 FOR Y=1 TO NUMDAIT-1
580 IF V(Y)<V(Y+1) THEN GOSUB 940
590 NEXT Y
600 NEXT X
610 REM VARIANCES, SD'S, MEAN DEVS FROM
    MEAN & MEDIAN
620 DEF FN T (T)=T*T
630 LET VAR=0:LET ME=0:LET M5=0
640 FOR N=1 TO NUMDAIT
650 LET T1=ABS(A(N)-MN):LET ME=ME+T1
660 LET T2=ABS(A(N)-MD):LET M5=M5+T2
670 LET T=(A(N)-MN)
680 LET VAR=VAR+FN T (T)
690 NEXT N
700 LET ME=ME/NUMDAIT:LET M5=M5/NUMDAIT
710 LET VP=VAR/NUMDAIT:LET VS=VAR/
    (NUMDAIT-1):LET PSD=SQR(VP)
711 LET SAMPSD=SQR(VS)
720 REM PRINTOUT
730 PRINT"@"
740 PRINT"NO. OF DATA ITEMS";TAB(19);
    "=";TAB(22);NUMDAIT
742 PRINT"SUM";TAB(19); "=";TAB(22);TAL
743 PRINT"LARGEST";TAB(19); "=";TAB(22);MAX

```

```

744 PRINT "SMALLEST"; TAB(19); "="; TAB(22); MIN
745 PRINT "RANGE"; TAB(19); "="; TAB(22); RANGE
750 PRINT "MEAN"; TAB(19); "="; TAB(22); MN
760 PRINT "MEDIAN"; TAB(19); "="; TAB(22); MD
765 LET TA=22
767 IF N=2 THEN PRINT "MODE"; TAB(19); "=";
    TAB(22); MODE: GOTO 790
770 PRINT "MODE"; TAB(19); "="; TAB(22); W(1)
    ; LET TA=TA+LEN (STR$ (W(1)))+1
772 IF TA=30 THEN PRINT TAB(22); :
    LET TA=22
773 FOR N=2 TO NUMDAIT
774 IF V(N)=V(1) THEN PRINT ",;W(N);":
    LET TA=TA+1+LEN (STR$ (W(N)))
776 IF TA=32 THEN PRINT TAB(22); :
    LET TA=22
778 NEXT N
780 PRINT
790 PRINT "MEAN DEVIATION"
791 PRINT TAB(4); "FROM MEAN"; TAB(19); "=";
    TAB(22); ME
792 PRINT "MEAN DEVIATION"
793 PRINT TAB(4); "FROM MEDIAN"; TAB(19);
    "="; TAB(22); MS
800 PRINT "POPULATION STANDARD"
801 PRINT TAB(4); "DEVIATION"; TAB(19);
    "="; TAB(22); PSD
802 PRINT "SAMPLE STANDARD"
803 PRINT TAB(4); "DEVIATION"; TAB(19);
    "="; TAB(22); SAMPSON

```

```

804 PRINT "POPULAT. VARIANCE"; TAB(19);
    "="; TAB(22); VP
805 PRINT "SAMPLE VARIANCE"; TAB(19);
    "="; TAB(22); VS
820 PRINT "PRESS ""L"" TO GET AN
    ORDERED LIST OF"
821 PRINT "DATA ITEMS OR PRESS ANY
    OTHER KEY TO"
822 PRINT "CONTINUE"
830 GET T$: IF T$="" THEN GOTO 830
840 IF T$<>"L" THEN GOTO 890
850 PRINT "J"
860 FOR N=1 TO NUMDAIT: PRINT A(N); : NEXT N
880 PRINT "XXXXXXXXXXXXXXXXXXXX": PRINT "PRESS
    ""I"" TO SEE PREVIOUSLY"
881 PRINT "DISPLAYED DATA OR PRESS
    ANY OTHER"
882 PRINT "KEY TO CONTINUE"
883 GET Z$: IF Z$="" THEN GOTO 883
884 IF Z$="1" THEN GOTO 720
890 PRINT "J": CLR
900 PRINT "XXXXXXXXXXXXXXXXXXXX": PRINT "DO
    YOU WANT TO RUN PROGRAM AGRIN(Y/N)?"
910 GET Y$: IF Y$="" THEN GOTO 910
920 IF Y$<>"Y" THEN PRINT "J": END
930 CLR: PRINT "J": GOTO 110
940 LET S=V(Y): LET U=W(Y)
950 LET V(Y)=V(Y+1): LET W(Y)=W(Y+1)
960 LET V(Y+1)=S: LET W(Y+1)=U
970 RETURN

```

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P0200

As time goes by . . .

Keep track of those long hours at the keyboard with this interrupt driven clock by **S Potter**

This program is an RSX or Residential System Extension program which means its operation is controlled by real commands, not calls or pokes.

Locomotive Basic allows the machine code programmer to assign new keywords to the operating system and the system accepts them as it would normal keywords such as, *Print* etc. It is the programmer's job define the keywords and point them in the general direction of the routine they should control. These new keywords are preceded by the symbol ":" (found by *Shift* @).

The program is the Real Time Digital Alarm Clock for the Amstrad CPC 464/664 and is written as an RSX to allow ease of use.

The Amstrad has no fewer than four different types of interrupt easily accessible to the programmer, not counting the Basic *Every/After* interrupts which unfortunately are at a lower level of

priority and suffer delays to *Input* etc.

This program uses the *Ticker* interrupt which is a 80th second interrupt and uses a count of 50, thus the program is accessed once every second. Consult the Concise Firmware Manual for more details on RSX and interrupts.

Type in the Basic loader, remembering to save the program before calling the program. Normally the start address is 40000 and is 500 bytes long so save the program by Save "title",b,40000,500,40000.

With the Basic listing you will find odd line numbers; these are to coincide with the start address of the eight bytes of data on that line, the last number is the checksum of that line. To make typing easy use type in direct mode *Auto 40000.8* to generate the line numbers. Any errors will report the line number where the error occurred. After running the Basic program with no error reports, Save the code as above and *Call 40000*.

The commands for the clock are: *Clockon, hour, minute, second* to display the clock and set the time. The parameters are optional when just redisplaying the clock, and the seconds are also optional.

:Clockoff to hide the clock display.

:Alarmon, hours, minutes to set the alarm time and counting.

:**Alarmoff** is entered to switch it off

:Clockadj,n is used to adjust the clock timekeeping. The correct figure is 50 but may be altered to adjust the timekeeping in 50ths of a second fast or slow. Note the parameter is not checked so keep within 40-60 or the clock may stop or the computer is interrupted so often that it never returns control.

The program is located at 40000 to allow room for a *Symbol After 0 and DD* / disc drive if installed, when *Himen* is 40699, but may be relocated with an assembler to 500 bytes below *Himen* as required. It also uses all standard firmware calls and functions so memory area permitting will operate with most programs.

Finally, the clock is displayed in Window 7 so redefining Window 7 will allow the clock to be displayed anywhere on screen.

```

18 org 40000
20 entry: ld a, #05
30 ld (entry), a
40 ld (hour), a
50 xor a
60 ld (min), a
70 ld (sec), a
80 ld a, #0
90 ld a, #15
100 ld hl, a
110 call #bcbf
120
130 ld bc, contab
140 ld hl, workspace
150 call #bcd1
160
170 event: ld hl, tickblk6
180 ld b, 129
190 ld c, 0
200 ld de, clock
210 call #bca1
220
230 addth: ld hl, tickblk6
240 ld de, #0
250 ld bc, #50
260 call #bca9
270 ret
280
290 contab: defw names
300 jp ckoff
310 jp ckoff
320 jp sign
330 jp eloff
340 jp adi
350
360 names: defm "CLOCK0"
370 defb "1" + #00
380 defb "2" + #00
390 defb "3" + #00
400 defb "ALARM0"
410 defb "N" + #00
420 defb "ALARM0"
430 defb "F" + #00
440 defb "CLOCK0"
450 defb "U" + #00
460
470
480 clock: stu 8
490
500 id hl, sec
510 id de, constants
520 id b, #03
530 inc hl
540 counta: id a, (de)
550 inc hl
560 inc hl
570 inc hl
580 inc hl
590 dec hl
600
610 countb: inc de
620 inc hl
630 dinx counta
640 call alarm
650 call print
660 finish: ei
670 ret
680
690 print: stu 0
700 ld a, (toggle)
710 cp 0
720 ret z
730 id a, 7
740 call #bb54
750 id (stream), a
760 id a, #38
770 call #bb34
780
790 id a, (hour)
800 call decimal
810 id a, #0
820 call #bb34
830 id a, (min)
840 call decimal
850 id a, #0
860 call #bb34
870 id a, (sec)
880 call decimal
890
900 id a, (stream)
910 call #bb34
920 ret
930
940 decimal: id a, #47
950 split: inc a
960 sub 10
970 ld nc, split
980 add a, #58
990 id b, a
1000 id a, a
1010 call #bb5a
1020 id b, a
1030 call #bb34
1040
1050 atest: id a, (toggle)
1060 id a, 0
1070 cp 0
1080 ret z
1090 id a, (sec)
1100 cp 0
1110 ret nz
1120 id a, (min)
1130 ld b, a
1140 id a, (min)
1150 cp b
1160 ret nz
1170 id a, (hour)
1180 id b, a
1190 id a, (hour)
1200 cp b
1210 ret nz
1220 sound: id hl, wewow
1230
1240 call #bca4
1250 ret
1260 ckoff: di
1270 xor a
1280 ld (toggle), a
1290 call blank
1300 jp finish
1310
1320 ckon: di
1330 cp 1
1340 jp z, com
1350 cp 3
1360 jp z, setsec
1370 jp nc, error
1380 jp nc, error
1390 jr setth
1400 setsec: ld a, (ix)
1410 ld (sec), a
1420 inc ix
1430 inc ix
1440 setth: ld a, (ix)
1450 ld (sec), a
1460 inc ix
1470 inc ix
1480 ld a, (ix)
1490 ld (hour), a
1500 com: ld a, 7
1510 ld (toggle), a
1520 call #bb54
1530 jp finish
1540
1550 ckoff: xor a
1560 ld (toggle), a
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Open Forum

We are always actively seeking programs for publication - either for Open Forum, the machine pages or Star Game. When sending in a program for consideration, a clear program listing should be sent, together with, wherever possible, a saved copy on cassette. Documentation - usually not more than 1000 words - should start with a general description of the program, what it does, and then some detail of how the program itself is constructed. We pay very competitive rates, according to the length and nature of the program and the quality of the accompanying documentation.

Phase Angles

on Spectrum

The phase angle θ by which an alternating voltage or current leads or lags a reference axis needs to be known in many electrical circuits and networks. It can be calculated from the two rectangular alternating components, in-phase ('real') and in quadrature ('imaginary').

Program Notes

Line 40 - Prints the column headings.

Lines 50 & 60 - Invite you to enter the (signed) components and PRINT these figures

In the relevant columns.

Line 10 - Deals with the special case of $p=0$, where $0 = \pm \pi/2$ radians (90°), according to the sign of q .

Line 80 - Calculators, for all other cases, the 1st (0°/90°) or 4th (0°/-90°) quadrant values of θ , as relevant to the signs of p and q , from the standard arc tan formula. This will also be the final value if p is +ve and q is either +ve or -ve.

Line 90 - Adds π radians (180°) to the apparent 4th quadrant result when p is -ve and q is +ve to give the true 2nd quadrant value of $0 (+90° + 180°)$.

Line 100 - Subtracts π radians (180°) from the

apparent 1st quadrant result when both p and q are -ve, to give the true 3rd quadrant value of $0 (-90° - 180°)$.

Line 110 - Converts 0 from radians to degrees and Prints it in the proper column.

Line 120 - Offers you the opportunity of entering another line of data, or of breaking out of the program, eg when having made a mistake in the entry, or in preparing a set of figures for a print-out.

Line 130 - Protects against a wrong number entry.

Line 140 - Invites another entry.

Line 150 - Breaks out of the program.

```
10 PRINT "4-QUADRANT AR 80 IF p>0 THEN LET phi=ATN (q
C-TAN"
20 PRINT "          /p)
30 PRINT "          0 J C Finlay 90 IF p<0 AND q>0 THEN LET ph
i=phi+PI
40 PRINT "In-phase";TAB 11;"QU=phi-PI.
adrasure";TAB 22;"Phi (deg)" 100 IF p<0 AND q<0 THEN LET phi
50 INPUT "Enter in-phase cospo 110 PRINT TAB 22;phi+180/PI
nent",p: PRINT p; 120 INPUT "Enter q to CONTINUE,
60 INPUT "Enter quadrature com 130 IF c>9 AND c<>10 THEN GO T
ponent",q: PRINT TAB 11;q; 140 IF c=9 THEN GO TO 50
70 IF p=0 THEN LET phi=PI/2*SG 150 IF c=10 THEN STOP
N q
```

The Music Box



Legendary name

The name of Robert Moog is almost legendary in the brief history of electronic music. Moog's work on sound synthesis in the early 60s was central to the development of early analogue synthesizers. He exploited the low noise and high stability of silicon transistors to create circuits whose frequency response and gain were smoothly and reliably determined by a control voltage. This meant that the output of one such voltage controlled circuit could be used as a signal or a control input into another such circuit. Two or more oscillators and amplifiers (VCOs and VCAs) could thus be 'patched' to-

gether in a variety of ways to produce complex tones.

By the late 60s, Moog's name - usually mispronounced (it rhymes with 'vogue') - was virtually synonymous with the newest and most exciting development in music of the period. Sadly, his career went into decline from that point. The Moog synth company was taken over and its founder treated - in his own words - as 'window dressing'. The rock lifestyle to which he contributed so much seemed to have claimed another victim.

Recently, Moog has resurfaced - as the chief scientist with Kurzweil Music, who produce the \$11,000 Kurzweil 250 keyboard. The 250, says Ray Kurzweil of Kurzweil Music, will destroy the market for acoustic pianos because its 'sound modelling' technique is so uncannily accurate. Reluctant to give away trade secrets, Kurzweil suggests only that the 250 uses a combination of digital sound sampling and pre-programmed algorithms to produce what many listeners say

is the closest sound yet to that of a real piano.

Kurzweil's reputation, however, is built on his entrepreneurial talent rather than his technical innovation or foresight. Detractors can't forget that, in the late 70s, Kurzweil's previous company, Kurzweil Computer, brought its founder considerable fortune (estimated at \$8m) by an apparently devious ploy. Having introduced a range of optical character readers which could convert writing into speech for rapid data entry or as an aid to the visually handicapped, Kurzweil sold his company to Xerox. It is said that he convinced Xerox that OCRs were about to become as common as photocopiers, just as he now claims that the 250 will replace the piano.

Whether the 250 will live up to this promise remains to be seen. Xerox, to be sure, have lost money on their range of OCRs. Cheaper versions of the 250 are on their way, says Kurzweil, but the competition is tough and, according to some, the 250 is far from perfect.

The saddest thing in all this evident hype is Moog's part. "The Kurzweil people understand my capabilities," says the great man, "and they're using them." But he played no role in the basic design of the 250 and was only brought in as a sort of acoustic arbitrator. His main contribution, according to Kurzweil, was "to settle our endless debates about whether we had gotten a sound right". Right sound or wrong sound, it all sounds fishy to me. If you want further details, however, you could contact Kurzweil Music Systems, Waltham, Mass., USA.

Gary Herman

The Music Box is a weekly column with news, reviews and readers' comments on all aspects of micros and music.

Any readers with experience of computer music making or companies with new product news are invited to write to drop a line explaining what they're doing to: Gary Herman, The Music Box, 12-13 Little Newport Street, London WC2R 3LD.



Alien 8

Some people are still having trouble with the *Knightlore* turbo loader routine and at the time of writing I'm not sure whether it's due to a printing error or whether it's because of certain peripherals. I should be coming up with a reliable routine next week.

However, this week I'm going to concentrate on *Alien 8*. I've withheld the infinite lives poke until we had an absolutely reliable way of getting past the loader. Lately I've been waking up in a cold sweat after nightmares about being chased by a giant drooling Speedlock, so it seemed like a good idea to try and sort it out once and for all. I've asked a talented hacker called Chris Allen to talk us through the way that Speedlock works.

It is probably without doubt the evildest of the Spectrum turbo loaders. It has hidden messages in the code such as, "Speedlock will damage your sanity," and the less prosaic, "bug off," for hackers. At the heart of it is, of course, the fast loader that makes it impossible to load the main block of the game if the loader is bypassed, but this is hidden by several layers of protection.

The principal problem is to stop the security loader from auto running. With normal games the simple solution is to 'merge' the header rather than 'load' it. However, it is possible to cause the machine to crash following a merge simply by poking illegal numbers into the memory where the Basic program lines are held - for example, removing the 'end of line' character, or by creating an illegal line length. Because of the way that 'merge' is designed to add two Basic programs together, the computer has to do a lot more checking of the code, line numbers etc than it does when loading.

The best solution is to use a new routine to create a new header that can be used to

replace that on the original tape, but will not auto-run. This allows the turbo routine to be 'loaded' followed by a return to Basic. The following is a short program that will create a new header.

```
10 FOR T=0 TO 28:READ A
20 POKE (23296+T),A:NEXT T
30 RANDOMISE USR 23296
40 DATA 221,33,12,91,17,17,
0,175,205,194,4,201
50 DATA 0,67,74,39,115,32,
80,82,79,71,32,141,05,
200,200,36,4
```

Put a blank tape in, start it recording, then Run the above program. Reset the computer with Randomise Usr 0. Rewind the tape and load the new header. Now insert the game and wind it just past the first burst of noise (i.e. the header). Start it playing and it should soon stop with 'OK' message.

For those that want to play the game you must type Poke 24809,83:Poke 24810,76:Goto 0. Restart the tape. Once the game has loaded you should see the Sinclair copyright message but as long as the border is black all is well. If the border is white there has been a loading error. If all is OK, then type Poke 51736,0 for infinite lives or Poke 42592,255 for (almost) infinite time. To start the game type Randomise Usr 25344. Alternatively you can hack around in the code an assembler at location \$6000 will not interfere with the *Alien 8* itself.

Anyone who wants to look into the way the turbo loader works will be in for a hard time. Not only has the essential code been hidden amongst a lot of 'illegal' Z80 opcodes but it has been

'XOR'd' twice to make the code look like gibberish. To make it readable you have to work out the correct numbers by which to 'XOR' it back again.

I'm going to stick with *Alien 8* for the rest of this week's column and first of all congratulations go out to J Anderson of Hounslow, Paul Marable of Dagenham, Jeremy Fisk of Bridgend, Bill Longley, Paul Olsen and Peter Kill of Colchester, Robert Daw of Bristol (who has also finished *Knightlore* with 87% and 32 days) and Andrew Wappat of Peterborough.

For those who are struggling here is a tip from J Anderson "If you can't see the way up to an object don't despair - there may be a hidden stairway. Some rooms may have hidden objects but only two objects can be left in a room at any one time so if you can't drop more than one then you know there is something hidden."

Finally some help from Adrian Gurney, but you will need to refer to our map. "If an object is dropped in a room where there is the correct socket for it it will home in on it. This can be very useful or very bad. In room E5 the remote controlled droid is hidden in the middle of the stack, one block down. Jump on nearby blocks or a valve to jump onto the blocks around it, which then disappear. The arrow blocks are at the bottom of the stack."

"At All, push the blocks to where the socket is and move each layer slightly to make a staircase. You need an object to stand on as well. Kill -

make the blocks around the flashing socket disappear by stepping on them - push the block over the socket out of the way. F15 - a very nasty room. When you enter, turn left or right and walk as far as you can. When the monster gets quite close, turn 180 degrees and walk into the other wall then walk along the wall to escape. H12 - jump onto nearest block and it will disappear, get clear and the robot will trap itself in the corner. Climb over the opposite end to get to the valve. C8 - climb steps and jump onto the big pile. D16 - to save time jump off the steps to get to the door near left. F9 - push the object off the block before picking it up to avoid the shells. F5 - carefully jump onto the moving platforms to get to the opposite side. E6 - jump onto the platform and onto the object."

"G2 - use the blocks to get to the higher exit. In E4 the block at the bottom of the big platform rises if you jump on it. In C4 the blocks on the far wall rise if you drop an object, walk a couple of paces onto the block and pick up the valve - the platform will rise allowing you to clear the pyramids."

"A6 - the object can be collected by standing half on the block, dropping a valve, jumping from valve to the platform and then to the top. In I8 there is a hidden valve at the bottom of the disappearing blocks. Be careful not to leave an object in a position usually occupied by a block when you leave the screen - it will be 'crushed' and disappear when you return."

Tony Kendle

We are searching for the top UK computer games player - the best there is!

The very best of Britain's game players will get to fight it out on a number of top secret new games - scheduled for release in the autumn.

Here's how it works

Study the table below and look at the column for the machine you have - these are the games you'll need to master. Send your high scores in on the form below, making sure that your scores are authenticated by a responsible individual signing the form. Any score achieved using technical short-cuts - such as infinite lives Pokes - will not be accepted.

Between now and September Tony Kendle will be keeping you up to date on the *Arcade Avenue* page with just who has the scores to beat. Then, in September, the top three scorers on each machine will battle it out for a place in the final and the chance to be the first to play our 'top secret' games.

Commodore	BBC	Spectrum	Amstrad
Game 1 Suicide Express	Elite	Technic Ted	Serial
Game 2 Beach Head	Jet Pac	3D Star Strike	Space Miner
Game 3 Shoot the Rapids	Charlie	Cyclone	

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Game 2 score:
Game 3 score:
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Address
Your signature	
Witness's signature	

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Addictive puzzle

At three o'clock this morning, well on his way to rescuing the Crown from the Serpents, poor old Grand Elf finally succumbed to the combined attack of two skeletons and a 'norrable Ruster.'

But don't worry - all this took place in a game: *Out of the Shadows* from Mizar Computing. You will know by now that text adventures are my favourite pastime, but occasionally a graphic adventure comes along that grabs my fancy. I don't mean titles such as the series from Ultima, or the hordes of platform games. Although I would agree that there is a large degree of puzzle-solving in these, in the end the score bears a direct relation to your reflexes. No, I am thinking now of those programs like *Telengard*, *The Ultima series Runes of Zendos* and *The Ring* series from Wintersoft.

Having seen *Out of the Shadows*, I am happy to say that here we have a good old knockabout which will please all those ax-D & D'ers who write to me, looking for a similar experience from their computers. I have to admit that there is rather more bash than puzzle in this one, but it is still addictive.

Play follows the usual pattern of these affairs - that is, you start off in your home, with but your hands, or at best a lowly dagger about your person, and a measly two silver coins. Before being deposited in the adventure, you can choose your Race - Human, Elf (a noble calling!) or Dwarf, each of which has its own attributes. Somewhere nearby your humble abode is a merchant's dwelling.

However, nothing is achieved by sit-

ting at home, even though it is nice and easy - sooner or later you will have to venture forth into the cold morning and face those nasty monsters. Although you haven't got a lot of cash at this point, you could do a lot worse than nipping quickly over to your next-door neighbour, the Merchant. Markers can come in very handy, and they are also the cheapest commodity, so you can pick up a couple of them to take along. Once you've built up some stocks of hard cash, you will be able to equip yourself with armour, spells and so on.

Command input is achieved with the keyboard, which, unless you're a touch typist, can be a little frustrating at times - reflexes are important in this game, although careful planning pays huge dividends. At the merchants, for example, you can find out how much each item is priced by typing *Cost*. Similarly, typing *List* will display a scrolling rundown on your status.

Many other commands are also available, such as *Open* (a box or casket, many of which are fortuitously left lying around), *Look* (in said box for its goodies) and *Torch* (on or off as necessary). To move, type *Go* and the direction - as with all the other commands, pressing *Enter* repeats the previous command, which makes things a little easier. Most of the other commands are concerned with combat, of which there is enough to please the most bloodthirsty player.

This is where the keyboard gets in the way: a little - having to type in *A*(ttack) *E*(scat) each time you want your hero to bash a Monster can get a little hectic. And this assumes that you have picked the right weapon to use beforehand (forward planning, again).

So far, so much like many other programs - but why *Out of the Shadows*? Well, this is where a brilliant stroke of genius on the part of the programmers makes this particular game so addictive and worth playing: as you, the player, move your little man around the screen, so your point of view enlarges. Thus, when you are in a room, your field of vision is, realistically, a narrow cone spreading out from the door. Move towards the door, and the cone enlarges. In a corridor, the 'orrible 'airies waiting just around the next corner are hidden from view, and you will only see them as you step, quaking, around the corner.

Although the graphic window on the adventure is a small area in the top left of the screen (all the text concerning your actions, your status and the outcome of battles scrolls up the right hand side of the screen; below the window is the weapon currently prepared for use), this reinforces the effect of the shadows. As you move your character around the screen, so the scene gradually unfolds around you. The by-product of this is that the graphics are only character-square sized, so that your monitor has to be nice and sharp to get the full benefit.

While the initial exploration takes place on the surface of this world, the main playing area is below ground. There are lots of holes around, down which our hero can fall, to the accompaniment of Spectrum whistles. Make sure you have had the foresight to purchase a Torch!

With a fast Saving and Loading of characters, so that they can be nurtured from level to level, gaining in experience, riches and strength, *Out of the Shadows* is a totally absorbing game and one which is not going to be far from my Spectrum. Mizar Computing, 104 Bradwell Road, Bradville, Milton Keynes MK13 7DH. £7.75.

The Quill has allowed anyone with a little imagination and a strong typing finger to indulge themselves and produce an adventure as good as any grand commercial effort. As you will know from reading this and other columns, Quill'd adventures are legion, but the ones that I most admire, and for which The Quill was surely meant, are those written by schoolkids in concerted effort. Allowing each member of the class to contribute his or her own idea of how the scenario should develop must be exciting for the kids, and, let me say very tentatively, of more value than a hundred so-called 'educational' programs.

The majority of these, I suppose, are never seen outside the confines of the school, but one that has come my way recently is from the Duncan Bowen Youth Wing, of Ashford (Kent or Middlesex, I know not). It's a very funny escapade concerning the kidnapping of a school teacher, and, of course, being written by school kids, plenty of fun is had at the expense of teachers. As well as this, it's not a bad little adventure!

Anyone interested in hearing about any problems that arose during the writing of this adventure should ring Mr J Fanning, the co-ordinator, on Ashford 29804.

Now, before you do anything else, turn to the back page. What do you see? That's right - not *Pimania*! Let's shed a small tear for his passing, for we shall not see his like again. I've never mentioned the cartoon (although *Pimania* of course has posed plenty of problems over the years - and where is the *Golden Sundial*?), but it has been a source of delight for a long long time.

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DUPLICATION

Dear Reader, my name is Simon Single. I am a computer enthusiast and have been involved in the computer industry for over 10 years. I have a large collection of software and hardware and am looking for a new challenge. I am currently looking for a part-time job in the computer industry.

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SINCLAIR QL software, books for sale or swap. Simon Chess, Simulation Techniques, Advanced Superbasic Programming and Introduction to Superbasic. Nigel Bennett 'Springtail', Mickiebird Lane Rawdon Head 1319 68A Tel (0532) 504431.

COMPUTER SYSTEMS - Spectrum £350, Atari 130, ZX81 £65, Jupiter Ace £25, all complete and working. Ring (0733) 371086 8pm (the Spectrum is a mega-Spectrum).

SPECTRUM 48K + Kempston joystick only 6 months old, some software £180 Tel (01) 405 3326 evenings.

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SPECTRUM 48K Issue 3, tape recorder, joystick, phone, Interface, mags 90+ games all vgc £160 and Tel Watford (0923) 43685.

SPECTRUM 16K - s/w £55 Tel 203 1577 Mid-Hants.

Wanted

WANTED Hunter Kelvin (Austalia) for my 48K Spectrum will swap "Match Day" (Ocean) Tel 081-368 3225 Terry.

WANTED ZX81 16K ram and power pack etc. Must be free or cheap. Will take failed packs free or cheap. Tel 072 57723.

WANTED Command modules for Texas 808A, educational or games, or anything else; any hardware/software considered depending on price e.g. physics/chemistry tester. Tel Washington 4163010.

WANTED Disk drive for Commodore 64 1541 model preferred. Will pay £90 ono. Accessories not necessary but would help. Tel 021 777 5023.

WANTED Spectrum Prolog - offers White Lightning & Utilities Wanted Printer Tel Hartwood 51321.

WANTED CBM64 disk drive 1541 for exchange. T1894/4, extended basic record keeping cartridge tape deck & leads. Basic cartridge professional Midway 400009.

WANTED crash issue one. Will pay if in good condition. Send to 33 Moore 23, Cromwell Road, Croydon, Surrey CR0 2AZ.

WANTED three Spectrum owners to play and share cost of computer wargame "Empires". John McHugh 44 Nomur Road, Penicuik Midlothian Tel Penicuik 77322.

NEED software for Spectrum 48K. Prefer purchase, single source in good condition and very competitive price. Pls include regd airmail charges. Reply to Moorthy Post Box 122 Sharjah Saudi Arabia.

WANTED Acorn Atom disk controller, drive etc. Also looking for software books. W. Gerster, Ahrweg 8 D-5305 Alfter, West Germany.

WANTED any computer cheap from Vic 20 to BBC. Competitve prices paid. Tel 0422 822067 after 6pm.

WANTED programmable reboots for ZX Spectrum Will pay up to £30 Tel 01-954 6791.

WANTED CBM64 £100 offered. Deeside 13696.

SWAP Oric 1 48K + recorder - £200 of original s/w, manuals & mags for CBM64 £200 Tel 01 742 4533 evenings.

40 CHANNEL SSM-C3 Radiomobile & Magmount 2 mths old. Cost £78 new. Want computer anything considered Tel: Dunbarton 61100 after 6pm.

MODEM wanted. Demon V or ZX1000 Swap for my PT-20 Casio organ proper keys, chords, bass/beat accompaniment. New from Xmas costs £60 Swap or sell £41. Tel: Richard (01) 699 7093.

SWAP BBC B' recorder + joysticks and £750 worth of software for CBM64 with disk drive. £20 and some software or will sell the lot for £400. Phone 01-647 5098 after 6pm.

SWAP 48K spec with a profile key board, ram, turbo, kempston, books, mags £300 of software for Amstrad 800XL with disk or sell for £200. Phone (0422) 822067 after 6pm (Might pay diff).

WANTED Spectrum software based speech synthesiser. Also may latest games for sale (0743) 63921 (David) after 6.30pm.

WANTED Flight Path 737 or buy or bar row for the Amstrad CPC 464. Stan 583 8522.

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WANTED ZX81, ZX80, Jupiter, Ace or Aquarius. Must be boxed and working with software. Pay up to £20 - depending on condition or swap for a Spectrum 16K (16-17 VU sound). Tel: 748 7325.

SWAP Spectrum 48K for Unicam modem plus associated rom and disk (for BBC) if needed will throw in joystick plus interface and software. Tel Chirk (0691) 772238.

WANTED Sinclair Visi-File program for 48K Spectrum Tel Derek on Reading 667181 after 5.30pm.

WANTED BBC B' games on disk 40 TR advertiser 302 Langland Road Netherfield, Milton Keynes MK6 4HY. £154. Max drive wanted for Com 64 will pay cash or p/s Spectrum 48K - cash Telephone Haydn Barker (0703) 813042 weekends only.

WANTED Commodore 64 disk drive with or without software. Must be in working order and reasonably cheap. Ring Haydn on Rotherham 813042.

SWAP Quickshot joystick and Kempston type interface for ZX plus with paper. Write to John Allison 119 Dovecot St. Stockton Cleveland TS18 1HG.

HELP I like to be a member of colour Genius user club especially one with news letter and technical advice.

SWAP Commodore 64 American model for similar English computer. Write to Mrs Watson 4 Lovelane Ave, North Shields Tyne and Wear NE29 0BX.

SWAP T193/4A with extended basic module, mags, books for real to real tape recorder. Tel Brian 05827 2096 anytime.

WANTED Vic-20 with at least one cartridge must be in perfect condition. Will pay up to £25. Tel (0865) 711594.

WANTED Computer with swap 10 geared drop handle. No Sinclair products. Must be in Oldham area. Tel Tony on 01620 2389.

SWAP Sharp M2700 (64K). Built in data recorder 27 game cassette owners manual etc for CBM64 with C2H recorder or sell for £230 onto

SWAP Hornby Zero 1 train control system worth £50 for disk drive, printer or modem for Commodore 64. Write to Simon, 15 Highfields, Maylands, Salford S30 7JP or Tel: Barnsley 762349.

WANTED good pools/acephorse predict for a/c astrology, biorhythm or other utility programs. Swap for new utility and games programs. Tel Hartlepool 51321.

WANTED Epson RX80F1 or FX80. Exchange for Epson TX80 plus cash or sell. Tel 01352 Amritsar 24346.

SWAP BBC B' s/w - cassette player for CBM 64 - disk drive or set. £225. Under guarantee. Tel 01 592 4668 after 6pm.

SWAP brand new CBM Plus 4 and tape recorder for CBM64 under 6 months old and in good condition or sell £140. Tel Watton (Norfolk) 352035.

WANTED printer/plottter for Dragon 32. Will pay up to £50 if in good condition. Phone 0633 420619 with details.

BUSINESS software wanted for CBM64 in particular Easy Stock, Easy Spell utilities. Write on phone prices etc to Dougherty 7 Albany Road Douglas 10 M or Tel 0624 74421 evenings 6pm 8pm.

COMMODORE 64 massive software clearout games utilities - business etc. Also I would like a CBM Epson printer interface will swap any of above s/w. Phone 01-748 8778 weekends. All s/w original. Many favourites.

KOALA Pad 3 s/w (disk) almost new. Swap for CBM64 or Commodore hardware or s/w (intelligent) or reasonable offer. Tel (0248) 353346.

SWAP Easysoft - liable finance on disk for music on disk. Or will £35 each Tel Notts 208108.

WANTED colour monitor disk drive for Amstrad 462. Also Epson or compatible printer. Tel Llongefni 724536 after 7pm.

2 TAMIYA electric off road racers. Charge, batteries + accessories plus 101 off road racer & spares. Worth over £800 for them. Swap for Sharp M280A or similar. Tel 01-803 0756.

PLUS 4 - 1541 disk drive, C2N data recorder + joystick - some s/w. Swap for BBC B' - disk. Tel: Ings, Chelmsford (0245) 355288 Phil.

WANTED extended basic for Texas 1199/4A must be under £30.00. Tel Langefni 724636.

Amstrad com pal wanted. 1 or 13 colour colour CPC 464. DK Tronic speech synth joystick software etc. Interstar, programming, games etc. Lee Barton 54 Haller, Buxton, Cheshire WA7.

Robonics Wala drive and five cartridges a/s original s/w swap for Microdrivex. Tel 1 Currys, mislot, misprint or offers Tel Abingdon 834613 evenings, weekends. Spectrum software for sale. Devpac 3 and Abersoft, Farnham 03-859 3798. Mr A. Poster.

Has any one got a map of Urban Upstart, any help will be appreciated. Tel Hartlepool 137 Sunderland Rd Kings Heath, Bham 14.

Swap my 48K Spectrum and joystick and Interface + all games books and mags £30. Cars for CBM in any condition of Electron or any computer. 0438 69558 after 6pm.

Swap Acorn Electron with £100 s/w and books in excellent condition for Spectrum + or sell for £215. Tel: Portsmouth (0705) 375655.

Wanted Acorn Atom Disk Controller. Drive etc. New or used!!! W. Gerster, Ahrweg 8 D-5305 Alfter, West Germany.

Wanted Chuckie Egg collector for use on Spectrum. Tel 01065641376.

Wanted 48K Spectrum owner (preferably King C) intent to swap s/w, insults etc. Davids 3 High Street, Drybrook, Glos GL17 3EA (good an adventures? good got. Quill instructions? perfect). A. Simmons 3 High Street, Drybrook, Glos GL17 3EA.



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Vic 20

1 (1) R.I.P.	(Mastertronic)
2 (1) Rockman	(Mastertronic)
3 (1) Mickey the Bricky	(Firebird)
4 (2) Doodlebug	(Mastertronic)
5 (1) Snake Bits	(Firebird)
6 (1) Super Shopper	(Mastertronic)
7 (1) Sub Hunt	(Mastertronic)
8 (1) 3D Maze	(Mastertronic)
9 (1) Crazy Kong	(Interceptor/Micron)
10 (1) New York Hunt	(Mastertronic)

(Compiled by Websters Software)

Commodore 64

1 (1) Master of the Lamp	(Activision)
2 (1) Bassball	(Elbow)
3 (1) Rock 'n' Bob	(Activision)
4 (1) Pastfinder	(Activision)
5 (2) Airwolf	(Elbow)
6 (1) BMX Racers	(Mastertronic)
7 (3) Booty	(Firebird)
8 (1) Chiller	(Mastertronic)
9 (1) Super Hunt	(US Gold)
10 (1) Skier	(Mastertronic)

(Compiled by Websters Software)

Spectrum

1 (5) Chuckie Egg II	(A&P)
2 (1) Dusty	(Firebird)
3 (1) Gyrion	(Firebird)
4 (1) Bruce Lee	(US Gold)
5 (1) Space Invaders	(US Gold)
6 (1) Tintin's Keepers	(Mastertronic)
7 (1) Skool Daze	(Micronetrix)
8 (1) Chiller	(Mastertronic)
9 (1) Starion	(Met House)
10 (1) Formula 1 Simulator	(Mastertronic)

(Compiled by Websters Software)

BBC 8

1 (1) Wizards	(Imagine)
2 (2) Football Manager	(Addictive)
3 (2) Min Office	(Database Pub)
4 (3) Castle Crash	(MicroPower)
5 (1) Frank	(Addictive)
6 (1) Challenger	(Mastertronic)
7 (1) Duck	(Firebird)
8 (1) Third Strike	(Firebird)
9 (6) Latin	(Firebird)
10 (7) Acid Drives	(Firebird)

(Compiled by Websters Software)

Amstrad

1 (1) Blue Man	(US Gold)
2 (1) Vegas Jackpot	(Melbourne House)
3 (2) Spitter Ace	(US Gold)
4 (1) Space Law	(US Gold)
5 (1) Doctor	(US Gold)
6 (1) Mr Do	(Collins)
7 (1) Smash Hits Vol. 2	(English Soft)
8 (1) Smash Hits Vol. 3	(English Soft)
9 (1) Smash Hits Vol. 1	(English Soft)
10 (2) F1/S Strike Eagle	(Centauri)

(Compiled by Websters Software)

C16

1 (1) BMX Racers	(Mastertronic)
2 (1) Vegas Jackpot	(Melbourne House)
3 (2) Classic Adventure	(Melbourne House)
4 (8) Flight Path 737	(Aurion)
5 (1) Aerobird	(Aurion)
6 (1) Wizards & the Princess	(Melbourne House)
7 (1) Koller Kong	(Melbourne House)
8 (1) Flight 019	(Craig Conn)
9 (9) Books	(CBS)
10 (4) Games Tapu 2	(Melbourne House)

(Compiled by Websters Software)

Amstrad

1 (1) Decathlon	(Ocean)
2 (4) Bureaucy	(Virgin)
3 (2) Jet Set Willy	(Software Project)
4 (3) Fighter Pilot	(Digital Interactions)
5 (6) Flight Path 737	(Aurion)
6 (1) Space Cap	(Aurion)
7 (1) Stock Market	(Aurion)
8 (1) Punchy	(Aurion)
9 (1) Foulard at Works End	(Interceptor)
10 (3) Hobbit	(Melbourne House)

(Compiled by Websters Software)

Event	Date	Venue	Admission	Organisers
Apple 86	May 8-10 10.00am-6.00pm May 11 10.00am-4.00pm	Novotel London W8	Free in advance from organisers	Database Publications 061-456 6380
Electron & BBC Micros User Show	May 8-11 10.00am-6.00pm	New Horticultural Halls London SW1	£3.00 adults £2.00 children	Database Publications 061-456 6383
16th Commodore Computer Show	June 7-8 10.00am-6.00pm June 9 10.00am-5.00pm	Novotel London W8	£2.00 adults £1.50 children	II + CS Marketing Ltd 01-630 5105

Readers' Chart No 23

1 (2) Soft Aid (Spectrum/C64)
2 (1) Alien 8 (Spectrum)
3 (4) Everyone's a Wally (Spectrum/C64)
4 (3) Knight Lore (Spectrum)
5 (5) Sorcery (C64/Amstrad)
6 (-) Match Day (Spectrum)
7 (10) Tir Na Nog (Spectrum/C64)
8 (7) Football Manager (Spectrum/C64/BBC/Electron/Oric/Atmos/Dragon/Vic20/ZX81)
9 (6) Ghostbusters (Spectrum/C64)
10 (8) Impossible Mission (C64)

Various Artists
Ultimate
Mikro-Gen
Ultimate
Virgin
Ocean
Gargoyle
Addictive Games
Activision
CBS/Epyx

Winning phrase No 23: "8 hot Italians kneel for Di" from Carol Sleight of The Avenue, Bentley, Doncaster, S Yorks, who receives £25. Others who came close were "Oil the old Ataris", from Philip Arkley, of Accrington in Lancs, and "Oh! 8 little ogres and a fink" from R Parker of Cirencester, Gloucs.

Now voting on week 25 - £25 to win

Each week *Popular* is compiling its own special software top ten chart - compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever - but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's chart, published above.

You can still vote in the chart without making up a slogan - but you won't be in with a chance of winning the prize.

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to: Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP.

Voting for Week 25 closes at 2pm on Wednesday May 15 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.

Name **My top 3: Voting Week 25**

Address 1

..... 2

..... 3

My phrase is:

New Releases

ULTIMATUM

Alligata sometimes think that I pick on them, but it isn't true. By and large, their products are better than the average and are reviewed accordingly. But what on earth does anyone think the review of *Night World* is going to be - I mean, are they serious?

Try this plot for size - search for the golden fleece, watch out for the demon lord, and as the sun moves across the sky you change from human to gargoyle. The plot is, obviously, a steal from *Knight Lore* and *Underworld*. This is made all the more absurd because Ultimatum have just released the real *Knight Lore* for the BBC and this program looks even more pathetic as a result.

You move a little man through screens of such visual simplicity they look like a straight conversion from the ZX81. No humorous ropes, ladders and all that here - you get blocks and holes like unfinished Lego. Every so often a tiny sprite - apparently a



Ultimatum Software © Ultimatum

harpie, although it looks like a green trout - moves across the screen and drains your energy.

The control responses are sluggish, the jump detection very inexact and the music is a rip-off of *Electricity* by Orchestral Manoeuvres in the Dark - anybody paying royalties? I think I'll leave it at that.

Program *Night World*

Price £6.95

Micro BBC

Supplier Alligata Software
1 Orange Street
Sheffield S1 4DW

ONE COMMAND

Several companies have tried to teach machine code through a program package and the real worth of the end results have been doubtful. One series of packages which I think will help - even if it doesn't get you a job with Ultimatum - is Dream Software's *Machine Code for Beginners* which is now available on several micros including the Electron, C16 and Plus/4.

What you get is a package that lets you try out short machine code programs without risk of crashes - you can see what is happening, register by register and on the stacks, and thus begin to grasp the point and logic of all those numbers. A well written booklet leads you through each new instruction and the use of stacks, flag setting, indexing and the like.

It's well judged in terms of pace of learning - one new command at a time, nothing too complicated to discourage you early on. For example you may choose first of all

PICK OF
the week

PLAY THE GAME

What happens when you mix the Amstrad with high resolution monitor and no attribute problems with Ultimate Play the Game? You get easily the best program the Amstrad has ever seen and a version of *Knight Lore* that is better than the original. In fact, if I were Amstrad I would be pleading with Ultimate to let me put the game out on the Amsoft label, even if it means taking no cut at all for myself.

Knight Lore on the Amstrad

■ *Knight Lore* on the Spectrum with better sound and more finely detailed, three coloured graphics. The awesome, intricate graphics are even more awesome, the look of the game on screen is enough to make most software houses, certainly all the Amstrad ones, pack up and go home.

To summarise the game, you must explore the rooms of the *Knight Lore* castle looking for the various mystic objects that will remove the curse that transforms you into a werewolf every time the sun sets - in the game this happens fairly frequently. The objects are protected by ghosts, guards and other things including various fiendish platforms which move and collapse without



warning. So far so *Manic Miner*-esque, but all the above happens in astounding 3D.

You see each room as though from a vantage point high in one corner of the room. The objects are so cleverly designed that they 'feel' solid, playing the game is as close to playing a 'cartoon' as anyone has got. If you have an Amstrad you should start whooping for joy.

Program *Knight Lore*

Price £9.95

Micro Amstrad CPC 464

Supplier Ultimate
The Green
Ashby de la Zouch
Leicestershire

to express all commands in binary rather than hex, since those OA's and 7C's put a lot of people off.

Program *Machine Code for Beginners*

Price £8.95

Micro Commodore etc

Supplier Dream Software
PO Box 64
Clifton
Bristol
BS8 2RG

This Week

Program	Type	Micro	Price	Supplier	Program	Type	Micro	Price	Supplier
Gatescrasher	Arc	Amstrad	£8.95	Amsoft	Knight Lore	Arc	BBC	£9.95	Ultimate
Knight Lore	Arc	Amstrad	£9.95	Ultimate	Bounty Bob Strikes	Arc	Commodore 64	£9.95	US Gold
Roland in Space	Arc	Amstrad	£8.95	Amsoft	Operation Swordfish	Arc	Commodore 64	£9.95	British Software
Home Account Manager	III	Amstrad	£14.95	Amsoft	Roland's Rat Race	Arc	Commodore 64	£7.95	Ocean
Ivostat	Ut	Amstrad	£29.95	Amsoft	MCT Basic	UI	Commodore 64	£10.95	MCT
Stock Ald	Ut	Amstrad	£29.95	Amsoft	Zork 1	Ad	Einstein	£41.40	Tatung
Hampstead	Ad	BBC	£9.95	Melbourne House	Fu-Kung in Vegas	Arc	Einstein	£9.95	Tatung
					Punchy	Arc	Einstein	£9.95	Tatung
					Space Trap	Arc	Einstein	£9.95	Tatung
					Alphabet Quest	Ed	Einstein	£14.95	Tatung

New Releases

AFTER 2049

Whenever a game is accused of being (by me usually) a mere *Manic Miner* clone people occasionally respond by saying 'ah but *Manic Miner* was a copy of *Miner 2049er*'.

This is somewhat true. *Miner 2049er* was an Atari game that featured platforms, things to collect, strange organisms and the like. However (I think) *Manic Miner* was about a trillion times more inventive, witty and subtle - and had a lot more screens.



BIG FIVE

The sequel to *Miner 2049er*, *Bounty Bob Strikes Back*, now available in this country on the Commodore through US Gold, is something I find extremely difficult to assess. Looked at in one light it is just more of the same old tired stuff; a little man, who jumps between platforms which turn a different colour as he walks over them, things to collect, monsters to squelch or by which to be squelched. There are a mere 28 screens, which is nothing these days, and whatever the blurb says the graphics aren't

that great.

On the other hand, it is well designed with an almost Matthew Smith level of care given to judging the screen layouts and providing odd objects to be mastered. These include lifts, acid rain, weirdos, suction tubes and other wonders. The game also has the most complicated high score table I've ever seen. On balance I'd say that if you really like *MM* style games this is one of the best for sheer fiendishness. If you're not convinced then this isn't going to change your mind.

Program *Bounty Bob Strikes Back*
Price £9.95
Micro Commodore 64
Supplier US Gold
 Unit 10
The Parkway
Industrial Centre
Hensage Street
Birmingham B7
4LY

EXTENDED

MCT Basic for the Commodore 64 is not your usual extended Basic. Actually it is designed to give the Commodore 64 many of the same commands as those on the Plus 4 and C16. It's similar enough such that you can type in C16 programs from magazines and expect them to run.

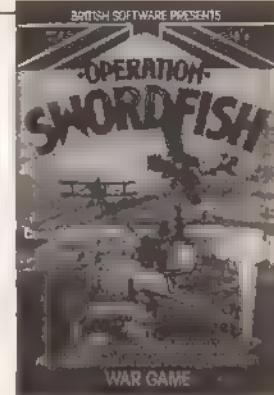
Obviously the main areas of change are commands like *Draw* and *Box* which make all those clever graphics available from Basic. Other commands give the Basic more structured commands.

MCT Basic also gives you a number of commands to access the Sid chip including

Envir envelope, *Filter*, *Vol-*
 a considerable improvement over all those pokes. The package also includes a 'free' cassette that uses the MCT Basic commands to provide a screen drawing program from joystick.

It's well done and really my only doubt is over the idea that there are lots of C16/+4 programs to be typed in from computer magazines. Actually there are very few around and no signs of the numbers picking up.

Program *MCT Basic*
Price £10.95
Micro Commodore 64
Supplier MCT
Group House
Fishers Lane
Norwich
Norfolk NR2 1ET



have to be more careful as the depth charges get closer.

It's graphically well done, particularly the movement of the planes, and is entertaining to play, though blasting away will probably get a bit tedious eventually.

TINFISH

British Software (there's an unequivocal title) has released what it describes as a war game called *Operation Swordfish*. But arcade addicts shouldn't be put off; it requires few of the usual wargaming skills of judgement and tactics - you just need to shoot straight and stay out of danger.

In fact, *Operation Swordfish* is very like *Beach Head* - you blast away at various ships in the far distance, trying to avoid their fire and depth charges. There are also aircraft defending the convoy to be shot at.

You can take your submarine to periscope depth and attack the convoy - the view changes to a periscope shape - but you must surface if you want to take on the aircraft. As the game progresses you

RAT TALES

More licensing deals. This time it's between Ocean and the force behind TV Am's *Roland Rat*. Together they bring us *Roland's Rat Race* and it's pretty nifty, good even.

The idea is that *Roland Rat* has to get to TV Am by transmission time lest he be fired (and replaced by a skateboarding duck or similar). Getting to work involves the usual massed sprites as *Roland* moves along pipes

This Week

Boardello	■	Einstein	£12.95	Bubble Bus	XBasic	UI	Spectrum	£5.00	Stratosoft
Classic Adventure	Ad	MSX	£6.95	Melbourne House					
Tasword MSX	UI	MSX	£13.95	Tasman					
Shadowfire	Ad	Spectrum	£9.95	Beyond					
Pete n Barry	Arc	Spectrum	£4.95	Impact					
Go	■	Spectrum	£8.95	Shodan					
Grand National	S	Spectrum	£6.95	Elite					
Maverick	S	Spectrum	£5.95	CCS					
Microdrive Ld/save	UI	Spectrum	£5.00	Stratosoft					

Key: Ad - adventure. S - strategy-simulation
 Arc - arcade. UI - Utility
 ■ - education.

and down tunnels collecting food for energy and dodging roving Wellington boots and worms.

Roland is armed with a glue gun to stop baddies in their tracks and can get a lift on an occasional train that passes. If you grab the right bits to make a key, Roland can also release friends Kevin and Erol who have apparently been kidnapped.

The graphics are pretty stylish - almost a touch of the Tony Crowthers in the background detail - and the game is pretty entertaining, the music being particularly bouncy. But there's nothing to get too excited about.



Program Roland's Rat Race
Price £7.98
Micro Commodore 64
Supplier Ocean
 Ocean
 6 Central Street
 Manchester
 M2 5NS

BEEB LORE

Overwhelming evidence that it ain't what you program, it's the way that you program it, with the release of *Knight*

Lore for the BBC B.

Most previous BBC games had graphics that looked like inferior Commodore sprites. But the BBC *Knight Lore* looks exactly the same as the Spectrum version, retaining the two colour limit, unlike the Amstrad version.

This is interesting. Where the Spectrum was limited to two colours to prevent the colours clashing, presumably with the BBC it's a case of memory limitations when you use the hi res the game requires. It also reveals, tacitly, just how much of Ultimate's genius lies in brilliant graphic design - the BBC processor is completely different from the Spectrum's, but making the graphics exactly the same by whatever technical trickery makes a game that plays exactly like the Spectrum version.

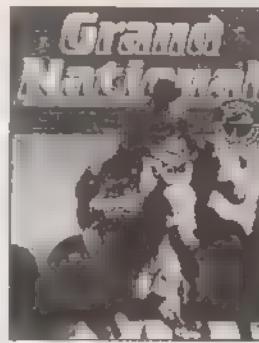
If you have a BBC and play arcade games on it then, with the exception of *Elite* - a very different style of game - this is quite simply the best. You'll love it.

Program Knight Lore
Price £9.85
Micro BBC B
Supplier Ultimate
 Ashby Computers
 and Graphics
 The Green
 Ashby de la Zouch
 Leicestershire
 LE6 5JU

BORN TO WIN

There are plenty of horse racing programs around from statistical betting aids to straight races with square blocks for horses. However, *Elite's Grand National* is something special - a racing

Amsoft, Brentwood House, 169 Kings Road, Brentwood, Essex 0277 230222. **Beyond**, Lector Court, 153 Farringdon Road, London EC1R 3AD. 01-837 2899. **British Software**, Greenway, Chislehurst, Kent BR7 6DL. **Bubble Bus**, 87 High Street, Tonbridge, Kent TN9 1RX. 0732 355862. **CCS**, 14 Langton Way, London SE3 7TL. **Elite**, 55 Bradford Street, Walsall WS1 3QD. 0922 611215. **Impact**, 2 New Street, Cullompton, Devon EX15 1HA. 0884 38312. **MCT**, Group House, Fishers Lane, Norwich, Norfolk NR2 1ET. **Melbourne House**, 39 Milton Trading Estate, Abingdon, Oxon OX14



game which uses all the arcade technicalities to produce a game that looks superb and plays wonderfully.

Obviously the gist of the game is to choose horses to bet on by studying form and then to actually ride a horse in the Grand National. It's the actual ride that makes the game. The centre screen shows a helicopter view of the action as your horse (maybe) moves up the field and passes the competition. Another screen gives a lateral view to help you judge when to jump at each fence and shows a beautifully animated horse. All the fiendish fences are here and falling just as you race into the lead reveals expletives previously unheard of.

Even if the idea of a racing game fills you, quite understandably, with boredom, take a look at *Grand National* and have your mind changed.

Program Grand National
Price £8.95
Micro Spectrum
Supplier Elite
 Anchor House
 Anchor Road
 Aldridge
 Walsall WS9 8PW

GO CRAZY

There have been a few versions around of *Go* for micros, most notably the prize winning version for the BBC (later converted to the Commodore 64). Now Spectrum owners can join the Chinese strategy game bandwagon with *Go* from Shodan Software.

It uses a mixture of Basic and machine code to give you a version of the game that plays all the authentic rules, accept various handicap levels including Komi - a special advantage which white may be given for moving second.

It plays well, although my play is no great challenge, and is generally functional. There are no spectacular graphics and the programming is adequate rather than superb. There were at least two bugs on the version I received, for one thing a Stop statement had been left in which prevented the game from working. When removed, everything was fine.

Go is also not listed in the Options list that comes up on screen, although it is available.

I think that given the above, the retail price of £8.95 is too much although obviously there are quite a few Spectrum-owning *Go* fans out there who will greet the program with glee.

Program Go
Price £8.95
Micro Spectrum
Supplier Shodan Software
 73 The General's
 Wood
 Harrowton
 Washington
 Tyne & Wear

This Week

4TD. 0235 835001. **Ocean**, 6 Central Street, Manchester M2 5NS. 061 832 6633. **Shodan**, 73 The General's Wood, Harrowton, Washington, Tyne and Wear. **Stratosoft**, 24 Willowtree Ave, Gilesgate Moor, Durham. **Teaman**, Springfield House, Hyde Terrace, Leeds LS2 9LN. 0532 438301. **Talung**, Stafford Park 10, Telford, Shropshire TF3 3AB. 0952 613111. **US Gold**, Unit 10, The Parkway Ind Centre, Heneage Street, Birmingham B7 4LY. **Ultimate**, Ultimate Play the Game, Ashby de la Zouch, Leicester LE6 5JV. 0530 411485.



On the margin

Here's an interesting fact - if an independent computer retailer needs a BBC, or a Commodore 16, 64 or Plus 4 he can buy it cheaper from Boots than his wholesaler. For Boots you can also read Currys, Dixons, Rumbelows and most other multiples. When this situation arose just after Christmas, we dealers were told that it was because the multiples had grossly overstocked, anticipating a Christmas bonanza which didn't come, and so were busy turning hardware back into cash, albeit at minimal profit.

The situation was complicated by Acorn's troubles which made many retailers nervous of holding large stocks of BBCs and anxious to get rid of those they already had. Dealers holding Electrons were badly hit by the slashed price and were forced to sell at a loss. The Spectrum was dropped and the price of the Spectrum Plus was axed without warning, except for the fortunate when heard over the 'grapevine'. Commodore fell from grace with the multiples by making the Plus 4 cheaper than the 64; the Plus 4 can now be bought for an amazing £130.

The strange thing about these price

cuts, particularly those generated by the shops themselves, is that they have persisted until now, almost five months since the alleged overstocking. The multiples must either be losing a lot of money on each computer or obtaining their supplies very cheaply.

On the face of it, all this is very good news for the customer and I hardly expect you to shed crocodile tears for the retailers. Before Christmas £300 for a Plus 4, now less than half that. Then £179 for a Spectrum Plus, now £118 if you know where to look. The problem is that the independent retailers are already starting to go broke, taking some of the wholesalers with them.

Quite soon the expert advice available from good independents will be hard to find - the customer will have to rely on the pimply youth in Boots.

The multiples will find themselves with even more power and will be able to dictate terms yet more clearly to the manufacturers. They will have the ability to make and break the micro suppliers. The trend will be towards more conservative models which are proven good sellers; the bright new ideas which have taken micros so far so quickly will not be risked.

Computers will become another routine consumer item, ranged on the shelves alongside washing machines and toasters, selling on brand name and marketing muscle with technical details relegated to a small appendix in the back of the 'instructions'. The idea of the owner being able to program it will be foreign; extra programs will be bought like attachments to a food mixer.

The thousands of small companies producing software and hardware accessories, run by enthusiasts and selling largely to enthusiasts, will feel the ground subside beneath them.

So the future for the lorry driver and his family - Alan Sugar's perceived market - looks rosy. The hobbyist - more Sir Clive's area - who is perhaps keener on state-of-the-art technology than having his connecting problems solved for him must look to the future with misgivings.

James Lucy

Clocking in

Puzzle No 157

Down at the 'Dog & Puddle' the patrons play an interesting game of darts. It is similar to 'Round the Clock' except for a number of details. The rules are as follows:

- i) A dart is thrown, and the score noted. This is known as the 'starting' score.
- ii) The player must then aim to hit the adjacent sector of the board progressing in an *anticlockwise* direction.
- iii) This score is then added to the starting score to obtain the running total.
- iv) The player then continues around the board in an *anticlockwise* direction until all segments of the board have been hit in turn.
- v) If at any time the total score is an exact multiple of the 'starting' score the player forfeits the game.

Understandably, this last rule has proved the downfall of many players. If you were playing, where would you aim your first dart?

(Note that doubles and trebles are only counted as the single score, and the bull and outer are not involved in this game).

Solution to Puzzle 152

There are three solutions.

$\log 484 = 2.68404536$, $\log 587 = 2.77587433$, and $\log 954 = 2.97984837$.

```
FOR N=100 TO 999
L=LOG(N)
L=L/2.302585092894046
L$=STR$(L)
IF VAL(MID$(L$,3,3))=N THEN PRINT N,L
NEXT N
```

The solution is found by placing the value of the common log into a string *L\$*, and checking to see if the third to fifth decimal places are the same as the original number.

The catch is that most micros only compute the natural logarithm of a number and not the common log. Consequently it is necessary to convert from the one type to the other. This is readily done by dividing the natural logarithm by the mathematical constant, *M*. This is the modulus of common logarithms and is equal to 2.302585092894046. . . .

Winner of Puzzle 152

The winner of Puzzle No 152 is J K Martin of Hackney, London E8, who receives £10.

Rules

The closing date for Puzzle 157 is June 5.

The Hackers

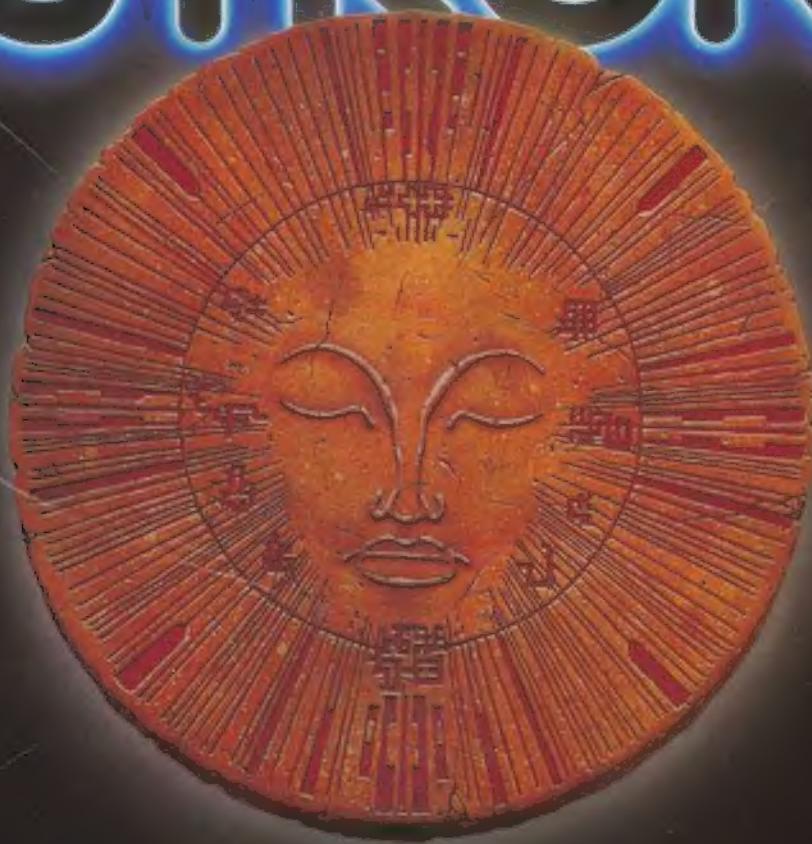


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see pack for details

• TAKE THE CHALLENGE •

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firebird

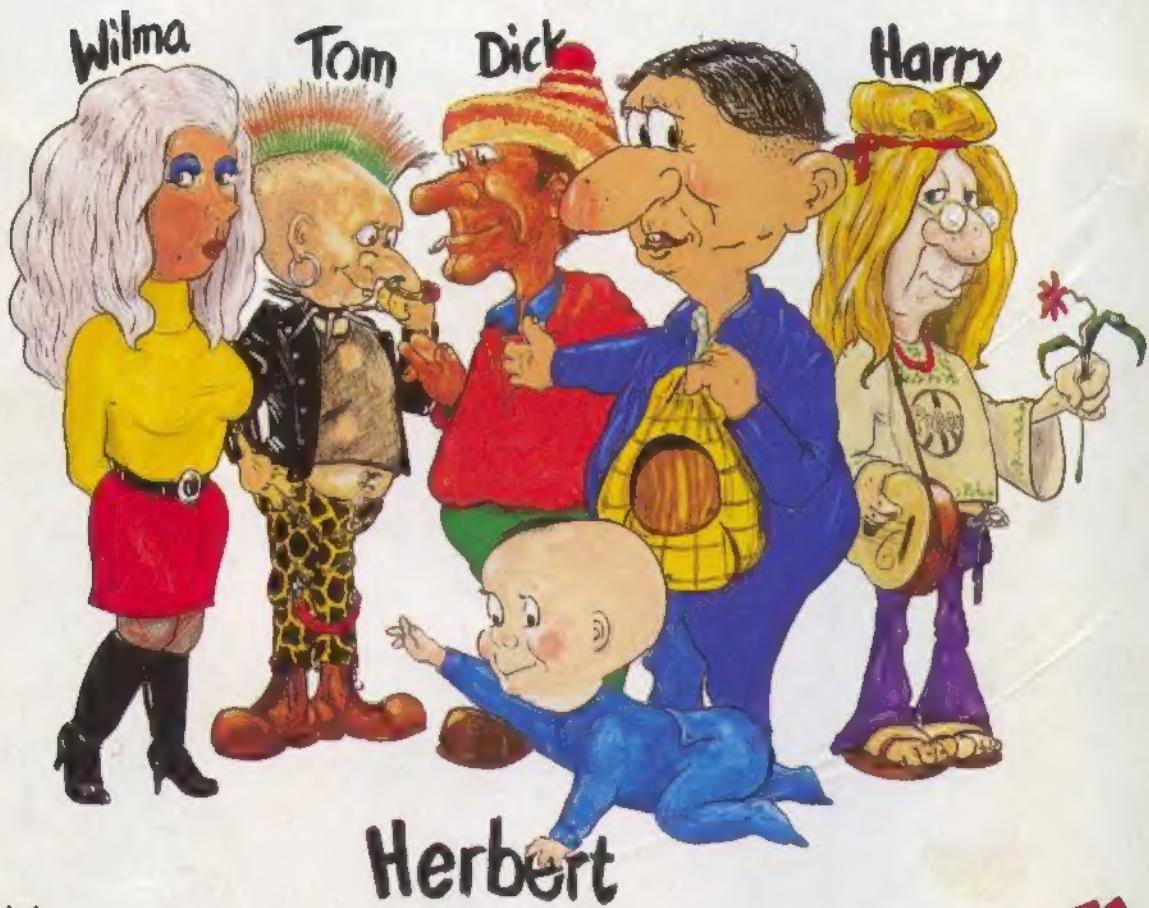
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